Report on Texas Bridges

as of September 2004

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Prepared by the Bridge Division
Texas Department of Transportation

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Executive Summary

This report describes Texas publicly owned vehicular bridges and their condition as of September 2004 based on information in the Bridge Inspection Database, the Unified Transportation Program (UTP) planning document, and the Design and Construction Information System (DCIS). It describes bridges categorized by location either on or off the state highway system, by age, by type, and by main-span material. It describes the condition of Texas bridges in terms of sufficiency: sufficient bridges, structurally deficient bridges, functionally obsolete bridges, and sub-standard-for-load-only bridges. This report tracks annual progress toward TxDOT's goals to make at least 80% of Texas bridges good or better by September 2011 and to accelerate the upgrade of all structurally deficient on-system bridges, prioritizing critically deficient bridges, to eliminate all structurally deficient on-system bridges.

By documenting its efforts in the preceding year, this report also illustrates TxDOT strategies to plan, build, maintain, maximize, and manage key state resources to ensure that Texas bridges meet objectives from the TxDOT Strategic Plan 2003-2007:

- Reliable mobility
- Improved safety
- Responsible system preservation
- Streamlined project delivery
- Economic vitality

Texas had 48,920 bridges in September 2004, and their condition at that time is shown by the following figure (same as Figure 3-2).

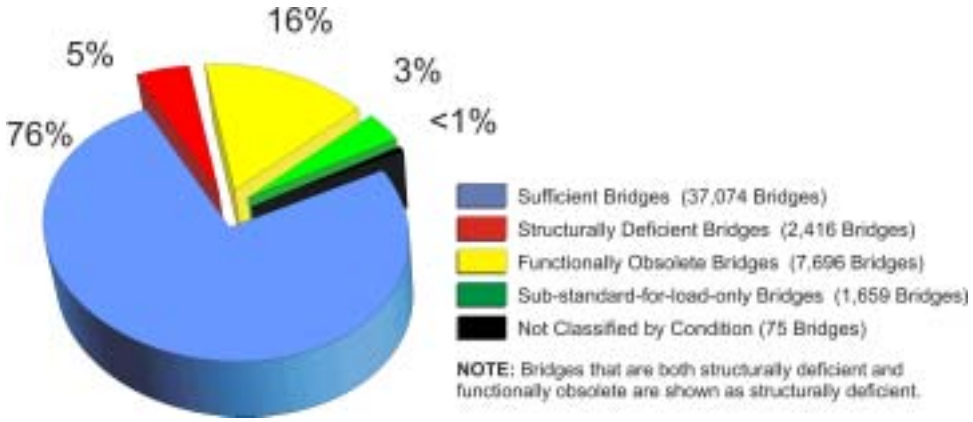


Figure ES-1. Condition of Texas Bridges by Count in September 2004 (48,920 Total)

During FY 2004, the number of sufficient bridges increased by 665—5 fewer sufficient on-system bridges and 670 additional sufficient off-system bridges; this number includes new-location bridges.

Of the non-sufficient bridges in Texas, FY 2004 produced a net improvement of 219 bridges, as shown by the negative numbers in the following table. This improvement encompassed 74 more on-system bridges that changed from sufficient to non-sufficient and 293 more off-system bridges that changed from non-sufficient to sufficient.

Table ES-1. Change in Condition of Non-sufficient Bridges during FY 2004

Condition	Change On-system	Change Off-system	Total Change
Structurally Deficient	– 80	– 182	– 262
Functionally Obsolete	+ 187	+ 32	+ 219
Sub-standard for load only	– 33	– 143	– 176
Total Change	+ 74	– 293	– 219

Change in the condition of non-sufficient Texas bridges during FY 2004 is shown in the following figure (same as Figure 3-5).

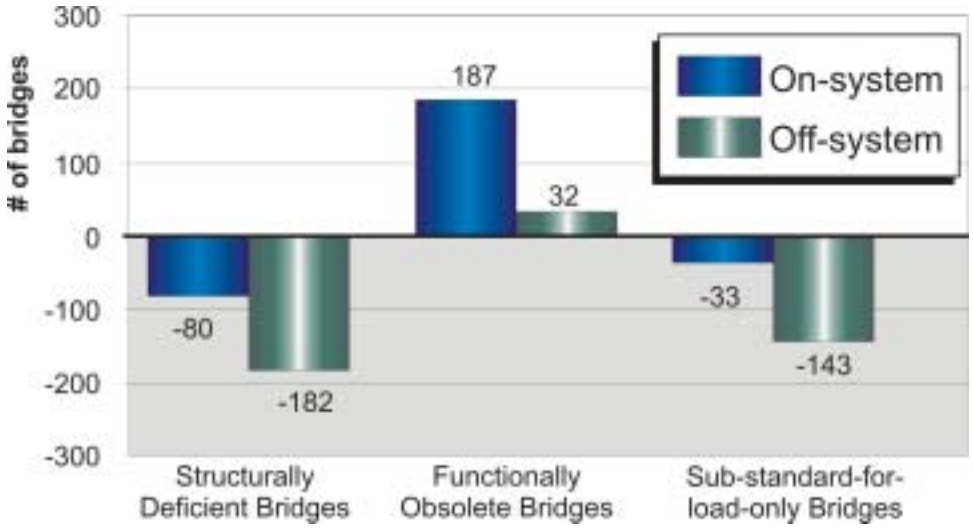


Figure ES-2. Change in Condition of Non-sufficient Bridges during FY 2004

Although the number of sufficient bridges in Texas increased in FY 2004 by 665, new-location bridges accounted for 463 of that number. However, the percentage of sufficient bridges has increased steadily—from 69.9% in September 2000 to 70.3% in September 2001 to 70.9% in September 2002 to 75.1% in September 2003 to 75.8% in September 2004.

This report distinguishes bridges by type, between span-type bridges and bridge-class culverts. Unlike bridge-class culverts, span-type bridges usually have decks and are more complex. As shown in Tables 3-7 and 3-8, of the span-type bridges the number of structurally deficient on-system span-type bridges decreased by 78 from September 2003 to September 2004, and the number of structurally deficient off-system span-type bridges decreased by 176 from September 2003 to September 2004. Nevertheless, in September 2004 most of the structurally deficient span-type bridges were still off-system: 495 on-system and 1,788 off-system. However, as shown in Tables 4-2 and 4-4, most of the structurally deficient span-type bridge deck area was on-system: 7,428,227 sq. ft. on-system and 3,118,843 sq. ft. off-system. This reflects the fact that on-system bridges tend to be larger than off-system bridges and are correspondingly more expensive to replace or rehabilitate.

During FY 2004, Texas contracted projects to address 179 structurally deficient bridges and 61 functionally obsolete bridges for a total of 240 deficient or obsolete bridges. To achieve the goals to make at least 80% of Texas bridges good or better and to accelerate the upgrade of all structurally deficient on-system bridges, TxDOT and local governments must work effectively to meet challenges:

- 565 structurally deficient on-system bridges and 1,497 additional bridges classified as structurally deficient, functionally obsolete, or sub-standard for load only in September 2004, for a total of 2,062, must be improved. This is an average of 295 structurally deficient on-system and other non-sufficient bridges per year over the next seven years.
- Bridges that will become structurally deficient, functionally obsolete, or sub-standard for load only in the coming years must also be improved. Over 56% of the bridges have been in service for more than 34 years. Increasing traffic volumes, heavier vehicle weights, and an aging infrastructure are increasing the need for additional funds and resources for maintenance, rehabilitation, and replacement of Texas bridges.

The following programs made funds available or facilitated upgrades of non-sufficient bridges:

- Highway Bridge Replacement and Rehabilitation Program (HBRRP)—TxDOT has administered this Federal Highway Administration (FHWA) program since its beginning in 1970. Initial funding participation requirements for both on- and off-system bridges were 80% federal and 20% local; however, in 1995 TxDOT initiated a change in participation requirements for off-system bridges to pay half of the local government's share (80% federal, 10% state, 10% local). This program provided funding for 175 structurally deficient and 43 functionally obsolete bridges that were contracted in FY 2004, for a total of 218 of the 240 deficient or obsolete bridges that were awarded contracts in FY 2004.
- State Infrastructure Bank (SIB)—Effective September 1997, this revolving account in the State Highway Fund allows TxDOT to award loans to local governments to support eligible transportation projects.
- Economically Disadvantaged Counties (EDC) Program—Effective January 1998, this program allows TxDOT to adjust a county's matching funds requirements after evaluating the local government's ability to meet the requirement. TxDOT also allows a county participating in the EDC program to use its adjusted participation amount in lieu of all or part of its 10% cost participation in the Participation-Waived Project/Equivalent-Match Project (PWP/EMP) program.
- PWP/EMP Program—Effective August 2000, revised local participation requirements allow 100% federal/state funding of a TxDOT-programmed participation-waived project (PWP) in cases where the local government agrees to perform structural improvement work on other equivalent-match-project (EMP) deficient bridges with a dollar amount at least equal to their normal 10% project match. State design standards apply to the PWPs while the EMP design standards are determined by the local governments based on local needs and standards.
- Simplified local government participation—Effective August 2000, when the local government elects to participate in the cost of a TxDOT-programmed bridge, instead of being responsible for 10% of actual costs, the local government is now responsible for 10% of the estimated project cost at the time the agreement with TxDOT is signed. The local government no longer participates in subsequent overruns in costs of program-eligible project items unless it lets and manages the project.

- Regional Mobility Authorities (RMAs)—Counties are beginning to explore bridge funding through RMAs for toll facilities.

As of September 2004, Texas must upgrade 295 structurally deficient on-system and other non-sufficient bridges each year to reach its goals of at least 80% of Texas bridges in good or better condition and no structurally deficient on-system bridges by September 2011.

TxDOT is adhering to the following plan to achieve its goals and is adjusting it annually after reviewing the effect of the preceding year's work on progress toward the goals:

- Develop and distribute an annual report to identify progress toward achieving the goal.
  Status: This report serves that purpose.
- Use the annual report to adjust the resources each year as needed.
  Status: Data compiled during development of the first issue of this report, *Report on Texas Bridges as of September 2001*, supported development of a new prioritization of bridge work for the 12-month letting schedule:
  Priority 1 – Critically deficient structurally deficient land-locking bridges
  Priority 2 – Remaining critically deficient structurally deficient bridges
  Priority 3 – Structurally deficient land-locking bridges
  Priority 4 – Remaining structurally deficient bridges
  Priority 5 – Functionally obsolete land-locking bridges
  Priority 6 – Remaining functionally obsolete bridges
- Produce completed bridge plans, specifically targeting those structurally deficient on-system bridges that are critically deficient, that will be available to substitute for delayed HBRRP projects.
  Status: TxDOT's Bridge Division and districts continue to work together to target these bridges for plan development.
- Produce completed bridge plans, targeting structurally deficient bridges that will be available to substitute for delayed HBRRP projects.
  Status: TxDOT's Bridge Division, with support from the Bridge Division bridge design consultant pool, continues to work with the districts to develop a backlog of projects to substitute for delayed HBRRP projects.
- Develop a process to substitute HBRRP projects for those that are delayed for letting to construction in order to contract 100 percent of HBRRP program funds on the 12-month HBRRP letting schedule each fiscal year.
  Status: TxDOT's Bridge Division is working with the districts to schedule HBRRP projects in the first eight months of each fiscal year to allow sufficient time to substitute for projects that are delayed to letting.
- Use other categories of funding in addition to HBRRP funds to achieve the goals.
  Status: TxDOT's Bridge Division and districts continue to emphasize using additional categories of funding for bridge replacement and rehabilitation.
  Standardize additional bridge elements and make them available on the Internet in order to simplify design, speed construction, and lower costs.
  Status: During FY 2004, TxDOT revised culvert and drainage standard drawings, updated standard drawings for prestressed concrete I-beam details, issued new miscellaneous bridge standard drawings, revised standard drawings for rail anchorage details, and issued new steel beam standard drawings.

- Increase the use of cluster contracts that address two or more deficient bridges within a reasonable geographical area. This should lower overall design and construction costs.
  Status: TxDOT's Bridge Division and districts continue to emphasize cluster contracts.
- Use maintenance funds to address on-system bridge problems that result in low condition ratings to prevent non-structurally deficient on-system bridges from becoming structurally deficient.
  Status: As shown in Figure 6-1, TxDOT distributed $58.8 M for on-system bridge maintenance in FY 2004, compared to 78.8 M in FY 2003, $57.2 M in FY 2002, and $57.6 M in FY 2001.

Chapter 1 – Overview

Introduction. In August 2001, Texas Transportation Commissioner John W. Johnson established the TxDOT goal[1] that within ten years at least 80% of the bridges in Texas would be in good or better condition. Structurally deficient, functionally obsolete, and sub-standard-for-load-only bridges need improvement and, therefore, are not in good or better condition. Classification of bridges by these conditions, which are described in Chapter 3, is based on regularly scheduled bridge safety inspections.

As part of the September 2001 evaluation of Texas bridges, TxDOT adopted an additional goal to accelerate the upgrade of all structurally deficient on-system bridges, giving highest priority to critically deficient bridges, in an effort to eliminate more quickly all structurally deficient on-system bridges.

The TxDOT Bridge Division tracks progress toward both goals in an annual report on the condition of publicly owned vehicular bridges:

- *Report on Texas Bridges as of September 2001*—Baseline information showing the state of the bridges at the end of FY 2001.
- *Report on Texas Bridges as of September 2002*—Information showing the state of the bridges at the end of FY 2002 and the changes since the previous year.
- *Report on Texas Bridges as of September 2003*—Information showing the state of the bridges at the end of FY 2003, changes during the previous two years.
- This report.

By documenting its efforts in the preceding year, this report also illustrates TxDOT strategies to plan, build, maintain, maximize, and manage key state resources to ensure that Texas bridges meet objectives from the TxDOT Strategic Plan 2003-2007:

- Reliable mobility
- Improved safety
- Responsible system preservation
- Streamlined project delivery
- Economic vitality

Purpose. This report describes the condition of all publicly owned vehicular bridges in Texas in FY 2004. It provides the following information:

- Chapter 2—Characteristics of Texas bridges, categorized by location on or off the state highway system, by age, by type, and by main-span material.
- Chapters 3 and 4—Condition of the bridges and changes from the preceding year.
- Chapters 5 and 6—Status of funding and letting of bridge projects at the end of FY 2004.
- Chapter 7—Concerns for the future of Texas bridges based on their attributes and conditions.
- Chapter 8—Summaries of progress made toward TxDOT's bridge goals and of innovations and best practices in the preceding year.

[1] Texas Transportation Commission's Transportation Working Group, "Texas Transportation Partnerships: Connecting You to the World," August 2001.

Data Source. TxDOT maintains its inspection information on each publicly owned vehicular bridge in the electronic Bridge Inspection Database. This database is a repository of information on the characteristics of the bridges and their conditions, and it provides the source of data for descriptions of bridges in this annual report. The database identifies each bridge by its National Bridge Inventory (NBI) number and is updated continually based on safety inspections.

TxDOT uses the Unified Transportation Program (UTP), a ten-year planning document, to guide and control project development. It identifies Texas projects scheduled to be let for construction bids and is typically updated and re-issued yearly. The UTP provides the source of data for funding information in this annual report.

TxDOT uses an automated information system—the Design and Construction Information System (DCIS)—for planning, programming, and developing projects. DCIS tracks information by work descriptions, funding requirements, and dates for proposed activities. DCIS provides the source of information on letting for construction bids of the projects described in this annual report.

These databases provide a wealth of information about Texas bridges. In addition, TxDOT continually evaluates bridge information needs and is currently developing new ways to collect and retrieve data.

Chapter 2 – Characteristics of Texas Bridges

Terms. Distinctive characteristics of publicly owned vehicular bridges include the following:

- *On-system or off-system*: On-system bridges are located on the designated state highway system, are administered by TxDOT, and are typically funded with a combination of federal and state or state-only funds. Off-system bridges are not part of the designated state highway system and are under the direct jurisdiction of the local government such as a county, city, other political subdivision of the state, or special district with authority to finance a highway improvement project. This report classifies bridges by their location on- or off-system.
- *Age*: This report classifies bridges by age according to significant historic changes in design criteria governing widths and live loads. Live loads are the moving weights placed on a bridge, not including the weight of the structure itself. In the few cases where accumulated data for a structure does not identify age, this report categorizes the age as "Not Classified."
- *Type*: This report distinguishes between span-type bridges and bridge-class culverts. A *span-type bridge* is a structure erected over a depression or an obstruction (such as water, a highway, or a railway), having a roadway for carrying traffic, and having an opening measured along the centerline of the roadway of more than 20 feet. A *bridge-class culvert* is a structure under the roadway, usually for drainage, with a clear opening of 20 feet or more measured along the centerline of the roadway or between extreme ends of the openings for multiple boxes or multiple pipes that are 60 inches or more in diameter. Bridge-class culverts are usually covered with embankment and are composed of structural material around their entire perimeter. Because of their simplicity of construction, bridge-class culverts are generally more durable than span-type bridges.
- *Main-span material*: This report categorizes bridges by main-span material: reinforced concrete, prestressed concrete, structural steel, and timber. For the few cases where inspection reports for a structure have not identified main-span material, this report categorizes the main-span material as "Other."

On- and Off-system Bridges. Texas has approximately 40% more bridges than any other state. The following figure shows the number of on- and off-system bridges in Texas.

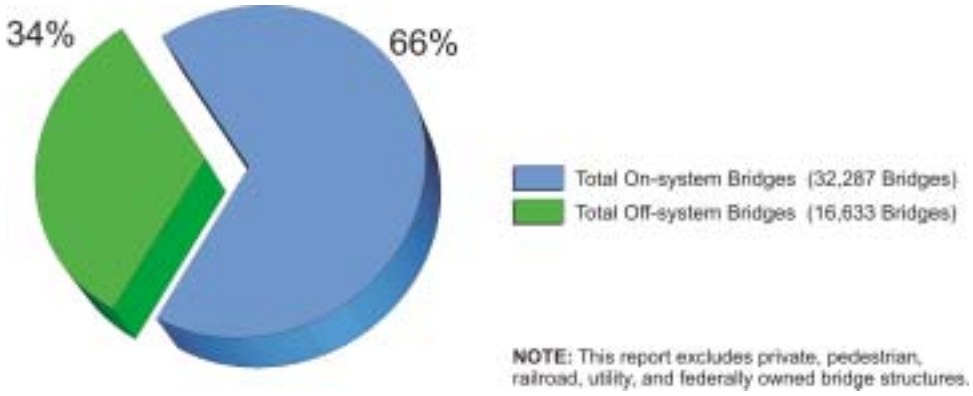


Figure 2-1. Count of On- and Off-system Texas Bridges (48,920 Total)

In September 2004, Texas had 32,287 on-system bridges and 16,633 off-system bridges, a total of 48,920 publicly owned vehicular bridges, 463 bridges more than in September 2003, 704 more bridges than in September 2002, 836 more bridges than in September 2001, and 1,132 more bridges than in September 2000. As shown in the following table, most of the bridges added during FY 2004—382 of them—are off-system bridges.

Table 2-1. Count of On- and Off-system Bridges

	On-system	Off-system	Total
Bridges in Sept. 2004	32,287	16,633	**48,920**
Bridges in Sept. 2003	32,206	16,251	**48,457**
Bridges in Sept. 2002	32,010	16,206	**48,216**
Bridges in Sept. 2001	31,933	16,151	**48,084**
Bridges in Sept. 2000	31,678	16,110	**47,788**
Change during FY 2004	+81	+382	**+463**
Change during FY 2003	+196	+45	**+241**
Change during FY 2002	+77	+55	**+132**
Change during FY 2001	+255	+41	**+296**

The following figure shows numbers of bridges added to the Texas bridge inventory during FY 2001, FY 2002, FY 2003, and FY 2004.

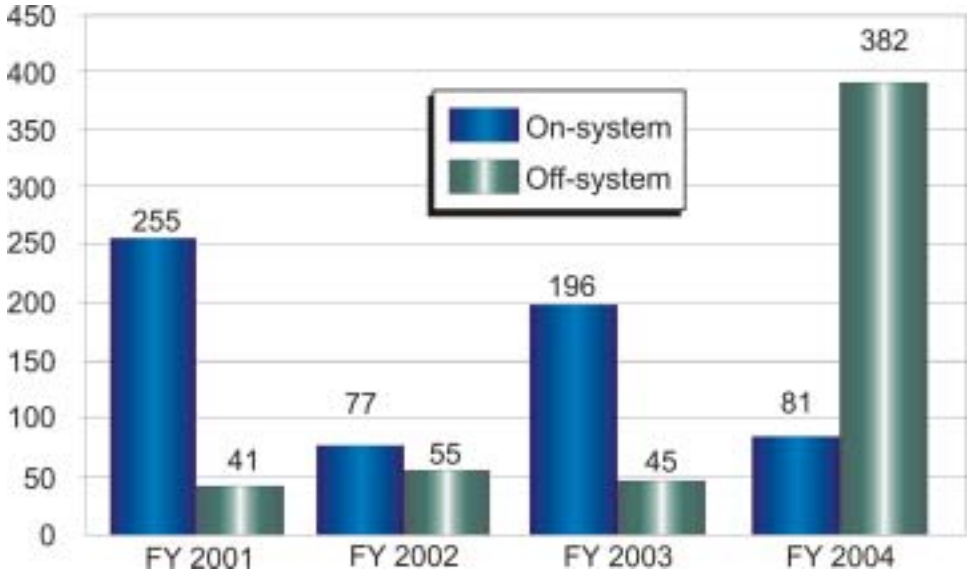


Figure 2-2. On- and Off-system Bridges Added to the Bridge Inventory

The following figure shows the number of on-system bridges in TxDOT districts.

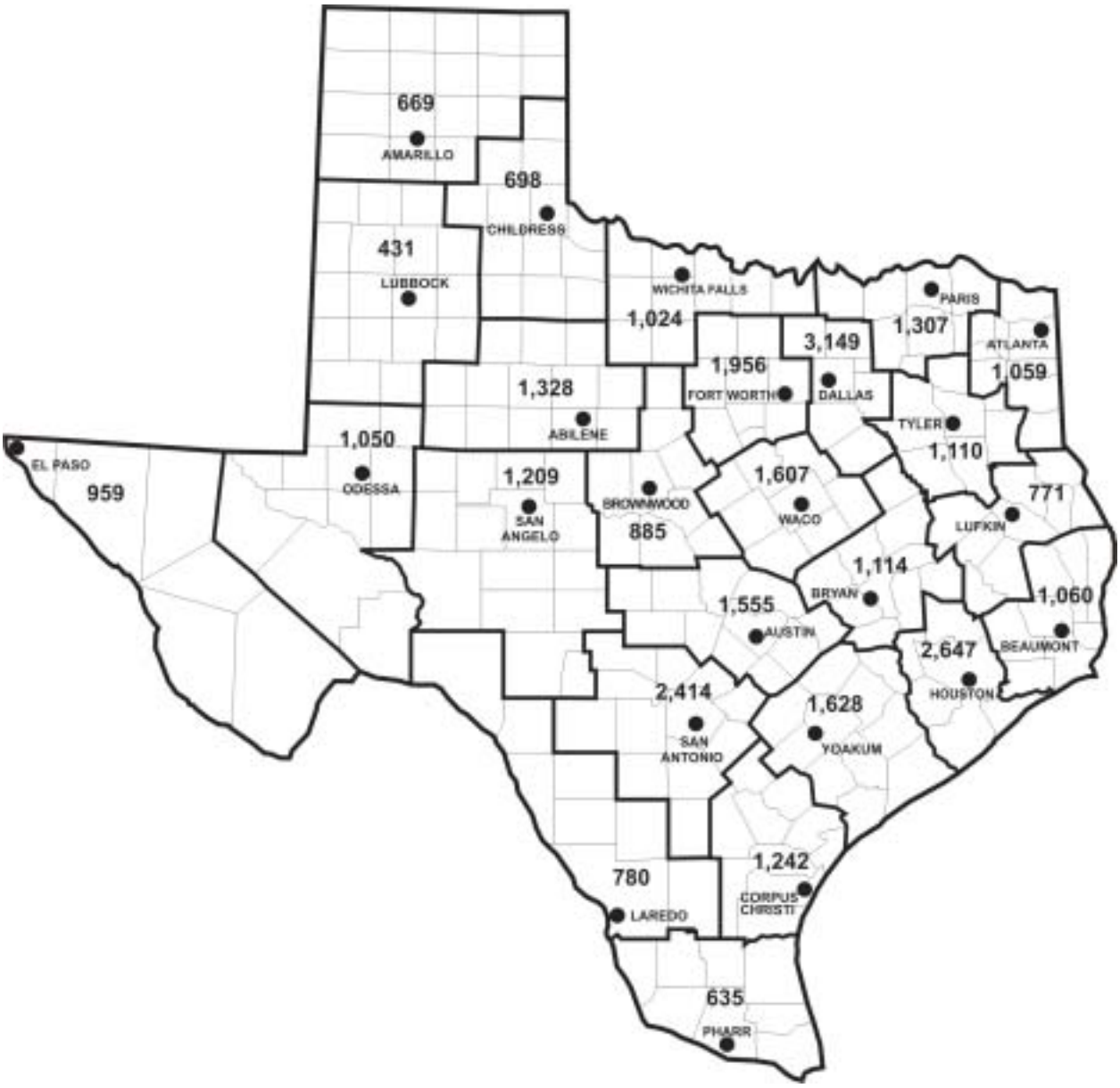


Figure 2-3. Count of On-system Bridges by District (32,287 Total)

Off-system bridges are under the jurisdiction of county, city, or other local governments. See Appendix C for a map of Texas counties by district and an alphabetical listing by county.

The following figure shows the number of off-system bridges in TxDOT districts.

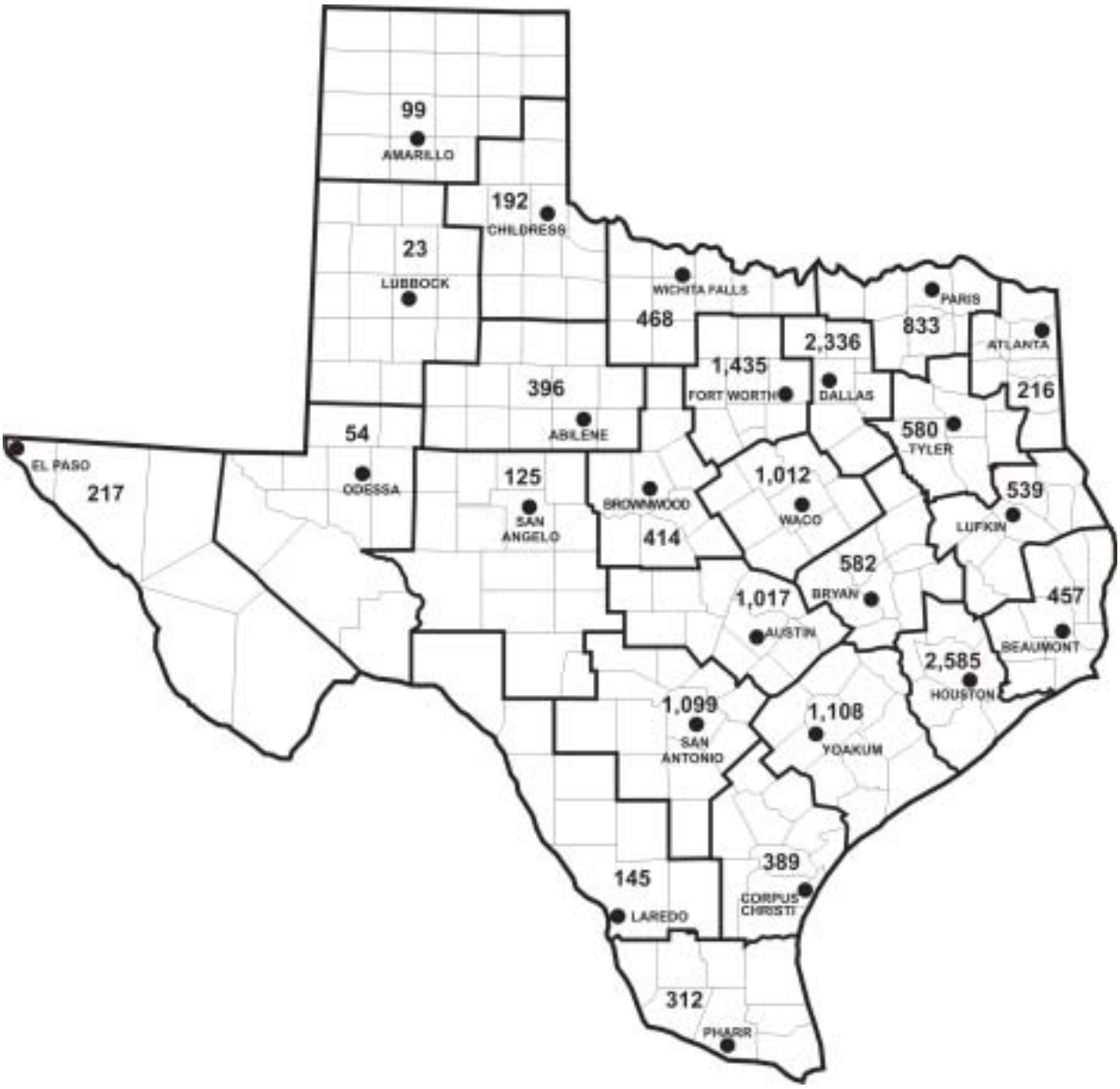


Figure 2-4. Count of Off-system Bridges by District (16,633 Total)

Age. Correlation between the age of bridges and their need for special maintenance predicts the need for resources to support bridge replacement and rehabilitation. In addition, on-system Texas bridges built after 1900 can be classified by significant changes in the design criteria that governed their construction:

- Built before 1950—Bridges generally designed for less than the current state legal load. Many of these bridges are load-posted.
- Built between 1950 and 1970—Bridges generally required to accommodate HS20[2] or higher design live loads but not required to be at least as wide as their approach roadways. (Required bridge load capacity is described in detail in the TxDOT online *Bridge Inspection Manual*.) A number of these bridges are too narrow to meet current requirements.
- Built after 1970—Bridges generally required to accommodate HS20 or above design live load and to be at least as wide as their approach roadways.

Between 1950 and 1970, many new-location bridges were built as the interstate and state highway system expanded. The number of on-system bridges built during this time was more than triple the number of off-system bridges built.

In FY 2004, 81 newly constructed on-system bridges and 382 newly constructed off-system bridges were added to the Texas inventory. In general, the number of off-system bridges has increased at a much faster rate than before 1970. The on-system transportation infrastructure is well established in contrast to the many new off-system roads and bridges in the increasing number of new subdivisions in urban areas across the state.

The following table and figures show bridges by age groupings.

Table 2-2. Age of Bridges in FY 2004

Age	On-system	Off-system	Total
Built before 1950	6,917	2,751	9,668
Built 1950-1970	14,008	3,756	17,764
Built after 1970	11,362	10,126	21,488
Total	**32,287**	**16,633**	**48,920**

[2] HS20 is the minimum design load recommended by the American Association of State Highway and Transportation Officials (AASHTO) for bridges on interstate highways. This loading is based on a hypothetical vehicle with one 8,000-lb. axle and two 32,000-lb. axles.

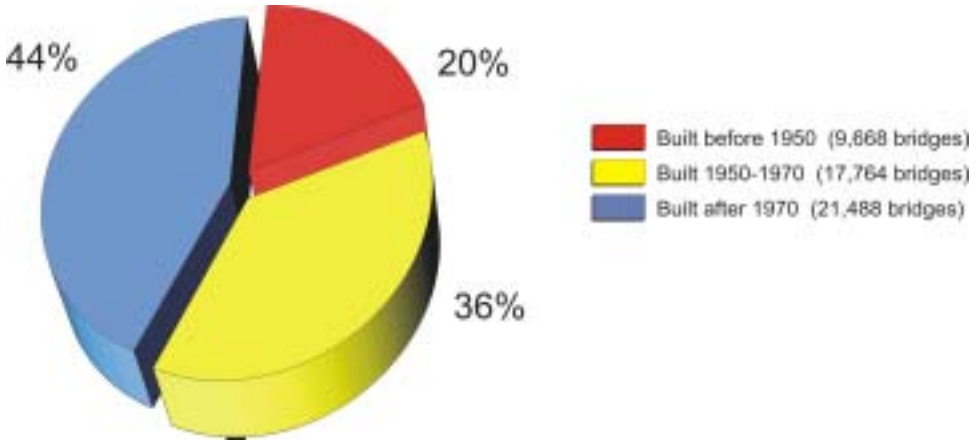


Figure 2-5. Age of On- and Off-system Texas Bridges

Approximately 56% of Texas bridges have been in service for more than 34 years. The average age of all on-system bridges is 40 years, and the average age of all off-system bridges is 31 years. The median age of all on-system bridges is 40 years, and the median age of all off-system bridges is 24 years.

The average age of on-system span-type bridges is 36 years, and the average age of off-system span-type bridges is 31 years. The median age of on-system span-type bridges is 40 years, and the median age of off-system span-type bridges is 24 years.

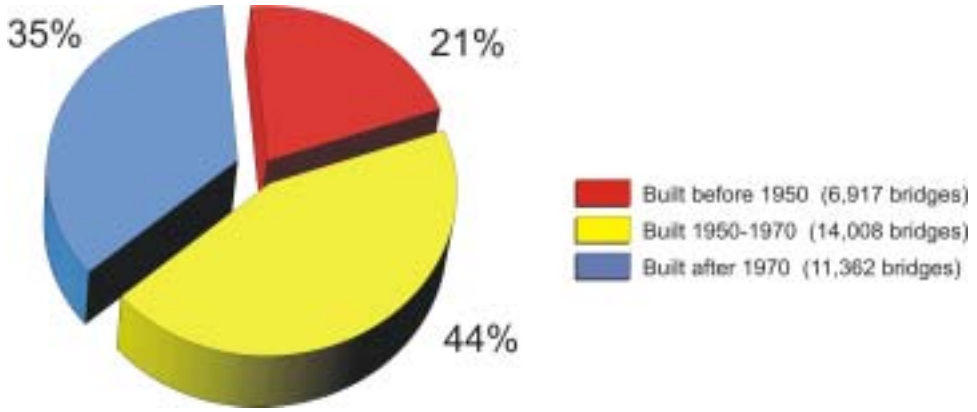


Figure 2-6. Age of On-system Bridges

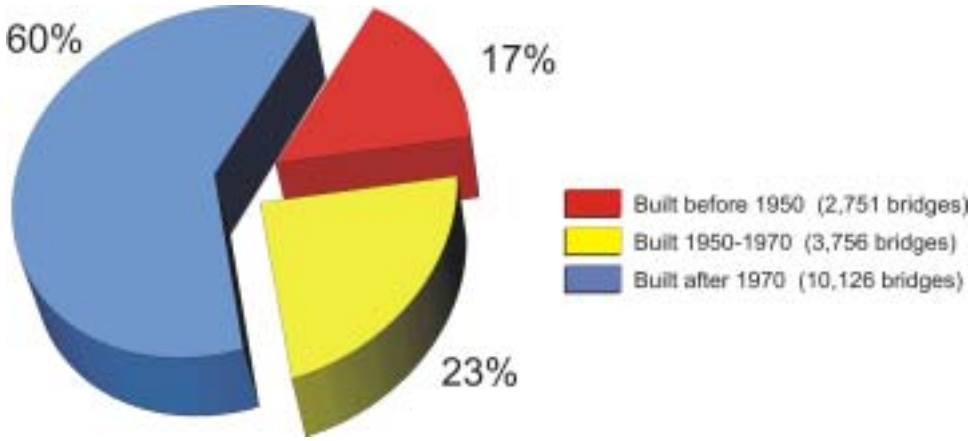


Figure 2-7. Age of Off-system Bridges

In September 2004, 35.2% of on-system bridges (down from 34.5% in September 2003) and 60.9% of off-system bridges (up from 57.6% in September 2003) had been built after 1970. The following table shows change in the age of Texas bridges during FY 2004.

Table 2-3. Change in Age of Bridges from September 2003 to September 2004

Age	As of Sept. 2003	As of Sept. 2004	Change
On-system Bridges			
▪ Built before 1950	6,979	6,917	–62
▪ Built 1950-1970	14,130	14,008	–122
▪ Built after 1970	11,097	11,362	+265
Off-system Bridges			
▪ Built before 1950	2,954	2,751	–203
▪ Built 1950-1970	3,943	3,756	–187
▪ Built after 1970	9,354	10,126	+772

Type. The following table shows the number of span-type bridges and bridge-class culverts in Texas. Just over 36% of Texas bridges are bridge-class culverts: 41% of on-system bridges and 27% of off-system bridges.

Table 2-4. Type of Bridges in FY 2004

Type	On-system	Off-system	Total
Bridges (span-type):	**19,154**	**12,071**	**31,225**
▪ Built before 1950	2,837	2,092	
▪ Built 1950-1970	8,052	2,667	
▪ Built after 1970	8,265	7,312	
Culverts (bridge-class):	**13,133**	**4,562**	**17,695**
▪ Built before 1950	4,080	659	
▪ Built 1950-1970	5,956	1,089	
▪ Built after 1970	3,097	2,814	
Total	**32,287**	**16,633**	**48,920**

Main-span Superstructure Material. The following table shows Texas bridges by type, age, and main-span material.

Table 2-5. Main-span Material for Bridges in FY 2004

Primary Material	On-system		Off-system		Total
	Bridge (Span-type)	Culvert (Bridge-class)*	Bridge (Span-type)	Culvert (Bridge-class)*	
Reinforced concrete:	**8,031**	**13,025**	**3,023**	**4,259**	**28,338**
▪ Built before 1950	2,049	4,032	693	577	
▪ Built 1950-1970	4,529	5,946	1,065	1,057	
▪ Built after 1970	1,453	3,047	1,265	2,625	
Prestressed concrete:	**8,050**	**NA**	**3,089**	**NA**	**11,139**
▪ Built before 1950	53	NA	19	NA	
▪ Built 1950-1970	1,788	NA	334	NA	
▪ Built after 1970	6,209	NA	2,736	NA	
Steel:	**3,048**	**34**	**4,416**	**188**	**7,686**
▪ Built before 1950	718	5	1,126	10	
▪ Built 1950-1970	1,727	3	835	23	
▪ Built after 1970	603	26	2,455	155	
Timber:	**22**	**0**	**1,509**	**0**	**1,531**
▪ Built before 1950	14	0	244	0	
▪ Built 1950-1970	8	0	430	0	
▪ Built after 1970	0	0	835	0	
Other:	**3**	**74**	**34**	**115**	**226**
▪ Built before 1950	3	43	10	72	
▪ Built 1950-1970	0	7	3	9	
▪ Built after 1970	0	24	21	34	
Total	**19,154**	**13,133**	**12,071**	**4,562**	**48,920**

***** Numbers for reinforced concrete bridge-class culverts include both reinforced and prestressed concrete.

Most on-system span-type bridges built between 1950 and 1970 have reinforced concrete main spans. Very few on-system span-type bridges have timber superstructures. Off-system span-type bridges built during the same period are likely to have either structural steel or reinforced concrete main spans. However, a number of off-system span-type bridges from all three age groups—nearly 13%—use timber. Timber and steel are popular with off-system bridge owners because of the following reasons:

- Steel and timber bridges are easier to construct in pieces and usually do not require specialized equipment to haul and erect.
- Recycled steel and timber are often incorporated into off-system bridges, reducing the initial cost of the bridge.
- Recycled railroad flat cars and barrels from railroad tank cars have been available for use in off-system bridges. Their high load capacity and relatively low cost make them attractive to local governments as bridge material. However, these structures have inherent geometric deficiencies, approved traffic railing is difficult if not impossible to install, and their use can limit hydraulic capacity.

During FY 2004, the number of on-system timber bridges did not change, and the number of off-system timber bridges decreased by 159.

Most on-system bridges built since 1970 have prestressed concrete main spans. More prestressed concrete and structural steel main span off-system bridges were built during this period than other main-span types. Although the proportion of timber bridges is decreasing, a number of off-system bridges built by local governments since 1970 are timber.

On-system Span-type Timber Bridges. Timber is sometimes used for bridge main spans, approach spans, and piling; however, it is not as durable as other bridge materials and it can deteriorate at a faster rate. In addition, piling length is restricted for timber substructures. TxDOT has not built on-system timber substructure bridges for more than 50 years, and as a result, on-system timber substructure bridges are reaching the end of their service life. For these reasons, TxDOT has begun targeting on-system bridges with timber substructures for replacement by bridges with more durable substructure materials.

In September 2001, Texas had a total of 279 on-system span-type bridges with timber substructures for main spans or approach spans. In September 2002, Texas had 11 fewer. In September 2003, Texas had another 34 fewer, and in September 2004, Texas had another 28 fewer as shown in the following table.

Table 2-6. On-system Span-type Timber Bridges by District

District	FY 2001 Bridge Count	FY 2002 Bridge Count	FY 2003* Bridge Count	FY 2004 Bridge Count
Abilene	0	0	0	0
Amarillo	21	20	18	17
Atlanta	40	37	28	17
Austin	8	8	8	7
Beaumont	18	18	17	15
Brownwood	1	1	0	0
Bryan	11	11	7	6
Childress	4	4	3	3
Corpus Christi	32	32	35	35
Dallas	34	29	29	29
El Paso	0	0	0	0
Fort Worth	7	7	1	0
Houston	5	5	5	5
Laredo	1	1	1	1
Lubbock	2	2	2	2
Lufkin	50	50	44	36
Odessa	1	1	1	2
Paris	7	6	5	4
Pharr	3	3	3	3
San Angelo	0	0	0	0
San Antonio	4	4	2	2
Tyler	2	2	0	0
Waco	5	5	4	2
Wichita Falls	1	0	0	0
Yoakum	22	22	20	20
Total	**279**	**268**	**234**	**206**

* The FY 2003 and FY 2004 counts of on-system span-type timber bridges include timber bent caps.

Chapter 3 – Condition of Texas Bridges

Terms. This report characterizes the condition of bridges as follows:

- *Sufficient structure:* A sufficient structure meets current federal and Texas requirements; it is not structurally deficient, functionally obsolete, or sub-standard for load only. Desirable change in sufficient structures from year to year is reflected by positive numbers, showing an increase in sufficient structures.
- *Non-sufficient structure:* A non-sufficient structure is structurally deficient, functionally obsolete, or sub-standard for load only. Desirable change in non-sufficient structures from year to year is reflected by negative numbers, showing a decrease in non-sufficient structures.
- *Structurally deficient structure:* A bridge or bridge-class culvert is classified by the Federal Highway Administration (FHWA) as structurally deficient if it meets any of the following criteria:
  - It has an extreme restriction on its load-carrying capacity.
  - It has deterioration severe enough to reduce its load-carrying capacity beneath its original as-built capacity.
  - It is closed.
  - It is frequently over-topped during flooding, creating severe traffic delays.
- *Critically deficient structure:* A bridge is classified by TxDOT as critically deficient if it is structurally deficient and in most need of attention.
- *Functionally obsolete structure:* A bridge is classified by the FHWA as functionally obsolete if it fails to meet its design criteria in any one of the following areas:
  - Deck geometry
  - Load-carrying capacity
  - Vertical or horizontal clearances
  - Approach roadway alignment

  In this report, structures that are both functionally obsolete and structurally deficient are counted only as structurally deficient.
- *Sub-standard-for-load-only structure:* A bridge is considered sub-standard for load only if it is not classified as structurally deficient or functionally obsolete but has a load capacity less than the maximum load permitted by state law. It has not deteriorated or has not deteriorated severely enough to reduce its load capacity beneath its original as-built capacity, but its original as-built capacity was not designed to carry current legal loads. A sub-standard-for-load-only structure is load-posted or recommended for load posting.
- *Load-posted bridge:* A bridge that is load-posted has a safe load capacity less than the state legal load, and its load capacity is communicated by signs at the bridge site. (Note. Certain vehicles, identified in Chapter 622 of the Texas Transportation Code, that exceed posted load capacity can legally use load-posted bridges.)
- *Land-locking bridges:* This report classifies a bridge as land-locking if it restricts traffic into an area because of load limitations or closures. These bridges are load-posted.

Categories of bridge conditions overlap. For example, a bridge that is structurally deficient is not necessarily load-posted, and a bridge that is load-posted is not necessarily classified as structurally deficient. The following figure shows conceptual overlap of the categories.

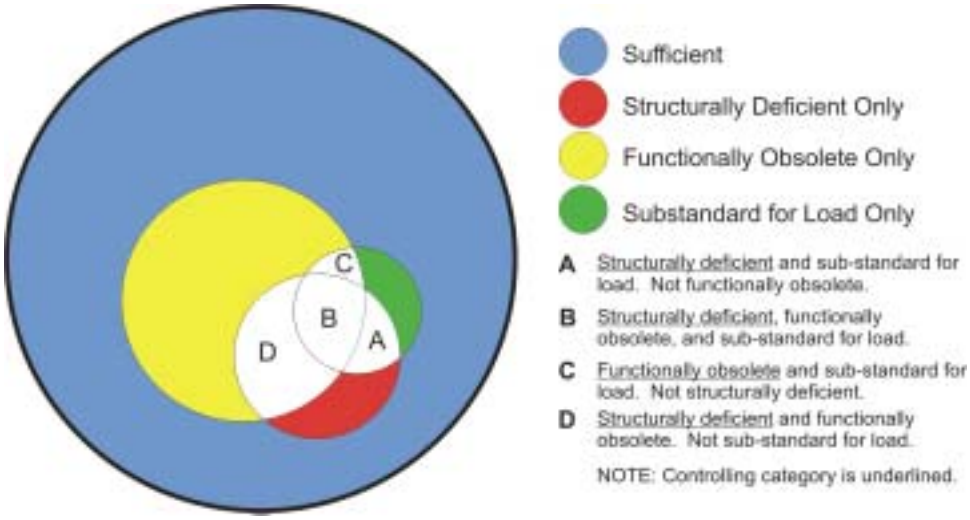


Figure 3-1. Categories of Bridge Conditions

This report identifies structurally deficient bridges by number of bridges and by square footage of bridge deck area. Square footage of deck area is provided because bridges exist in a variety of sizes and bridge replacement cost is proportional to deck area.

Structurally Deficient Bridges. In September 2004, a total of 2,416 of the state's 48,920 bridges were structurally deficient: 495 on-system span-type bridges, 70 on-system culverts, 1,788 off-system span-type bridges, and 63 off-system culverts as shown in Figure 3-2 and Table 3-8. Most of the structurally deficient bridges were off-system span-type bridges.

Overall, the total number of structurally deficient on-system bridges was 758 in September 2000 (680 span-type bridges and 78 bridge-class culverts), 763 in September 2001 (685 span-type bridges and 78 bridge-class culverts), 693 in September 2002 (622 span-type bridges and 71 bridge-class culverts), 645 in September 2003 (573 span-type bridges and 72 bridge-class culverts), and 565 in September 2004 (495 span-type bridges and 70 bridge-class culverts). The number of structurally deficient on-system bridges increased by 5 during FY 2001 (all on-system span-type bridges), but it decreased by 70 during FY 2002 (63 span-type bridges and 7 bridge-class culverts), it decreased by 43 in FY 2003 (48 fewer span-type bridges but 5 additional structurally deficient bridge-class culverts), and it decreased by 80 in FY 2004 (78 fewer span-type bridges and 2 fewer structurally deficient bridge-class culverts).

The total number of structurally deficient off-system bridges was 2,636 in September 2000 (2,566 span-type bridges and 70 bridge-class culverts), 2,433 in September 2001 (2,371 span-type bridges and 62 bridge-class culverts), 2,235 in September 2002 (2,161 span-type bridges and 74 bridge-class culverts), 2,033 in September 2003 (1,964 span-type bridges and 69 bridge-class culverts), and 1,851 in September 2004 (1,788 span-type bridges and 63 bridge-class culverts). The number of structurally deficient off-system bridges decreased by 203 during

FY 2001 (195 span-type bridges and 8 bridge-class culverts), it decreased by 198 during FY 2002 (210 fewer span-type bridges but 12 additional bridge-class culverts), it decreased by 84 during FY 2003 (82 fewer span-type bridges and 2 fewer bridge-class culverts), and it decreased by 182 in FY 2004 (176 fewer span-type bridges and 6 fewer bridge-class culverts).

Functionally Obsolete Bridges. In September 2004, a total of 7,696 of the state's 48,920 bridges were functionally obsolete: 3,302 on-system span-type bridges, 586 on-system culverts, 3,260 off-system span-type bridges, and 548 off-system culverts as shown in Figure 3-2 and Table 3-8. Most of the functionally obsolete bridges were off-system span-type bridges, followed closely by on-system span-type bridges.

Overall, the total number of functionally obsolete on-system bridges was 4,731 in September 2000 (4,153 span-type bridges and 578 bridge-class culverts), 4,751 in September 2001 (4,183 span-type bridges and 568 bridge-class culverts), 4,945 in September 2002 (4,317 span-type bridges and 628 bridge-class culverts), 3,701 in September 2003 (3,137 span-type bridges and 564 bridge-class culverts), and 3,888 in September 2004 (3,302 span-type bridges and 586 bridge-class culverts). The number of functionally obsolete on-system bridges increased by 20 during FY 2001 (30 more span-type bridges but 10 fewer bridge-class culverts), it increased by 194 during FY 2002 (134 span-type bridges and 60 bridge-class culverts), it increased by 40 in FY 2003 (83 more span-type bridges and 43 fewer bridge-class culverts), and it increased by 187 in FY 2004 (165 more span-type bridges and 22 more bridge-class culverts).

The total number of functionally obsolete off-system bridges was 4,314 in September 2000 (3,753 span-type bridges and 561 bridge-class culverts), 4,455 in September 2001 (3,844 span-type bridges and 611 bridge-class culverts), 4,447 in September 2002 (3,883 span-type bridges and 564 bridge-class culverts), 3,776 in September 2003 (3,277 span-type bridges and 499 bridge-class culverts), and 3,808 in September 2004 (3,260 span-type bridges and 548 bridge-class culverts). The number of functionally obsolete off-system bridges increased by 141 during FY 2001 (91 span-type bridges and 50 bridge-class culverts), but it decreased by 8 during FY 2002 (39 more span-type bridges but 47 fewer bridge-class culverts), it increased by 30 during FY 2003 (38 more span-type bridges and 8 fewer bridge-class culverts), and it increased by 32 during FY 2004 (17 fewer span-type bridges but 49 more bridge-class culverts).

Sub-standard for Load Only (Load-posted). In September 2004, a total of 1,659 of Texas' 48,920 bridges were classified sub-standard for load only: 148 on-system span-type bridges, 3 on-system culverts, 1,429 off-system span-type bridges, and 79 off-system culverts, as shown in Figure 3-2 and Table 3-8. Most of the sub-standard-for-load-only bridges were off-system span-type bridges.

Overall, the total number of sub-standard-for-load-only on-system bridges was 327 in September 2000 (293 span-type bridges and 34 bridge-class culverts), 272 in September 2001 (237 span-type bridges and 35 bridge-class culverts), 203 in September 2002 (190 span-type bridges and 13 bridge-class culverts), 184 in September 2003 (174 span-type bridges and 10 bridge-class culverts), and 151 in September 2004 (148 span-type bridges and 3 bridge-class culverts). The number of sub-standard-for-load-only on-system bridges decreased by 55 during FY 2001 (56 fewer span-type bridges but 1 more bridge-class culvert), it decreased by 69 during FY 2002 (47

span-type bridges and 22 bridge-class culverts), it decreased by 20 during FY 2003 (17 fewer span-type bridges and 3 fewer bridge-class culverts), and it decreased by 33 during FY 2004 (26 fewer span-type bridges and 7 fewer bridge-class culverts).

The total number of sub-standard-for-load-only off-system bridges was 1,489 in September 2000 (1,438 span-type bridges and 51 bridge-class culverts), 1,518 in September 2001 (1,465 span-type bridges and 53 bridge-class culverts), 1,451 in September 2002 (1,400 span-type bridges and 51 bridge-class culverts), 1,651 in September 2003 (1,580 span-type bridges and 71 bridge-class culverts), and 1,508 in September 2004 (1,429 span-type bridges and 79 bridge-class culverts). The number of sub-standard-for-load-only off-system bridges increased by 29 during FY 2001 (27 span-type bridges and 2 bridge-class culverts), but it decreased by 67 during FY 2002 (65 span-type bridges and 2 bridge-class culverts). It decreased by 50 during FY 2003 (69 fewer span-type bridges and 19 additional bridge-class culverts), and it decreased by 143 during FY 2004 (151 fewer span-type bridges and 8 more bridge-class culverts).

Condition of Bridges. The following figures show the condition of Texas bridges as of September 2004.

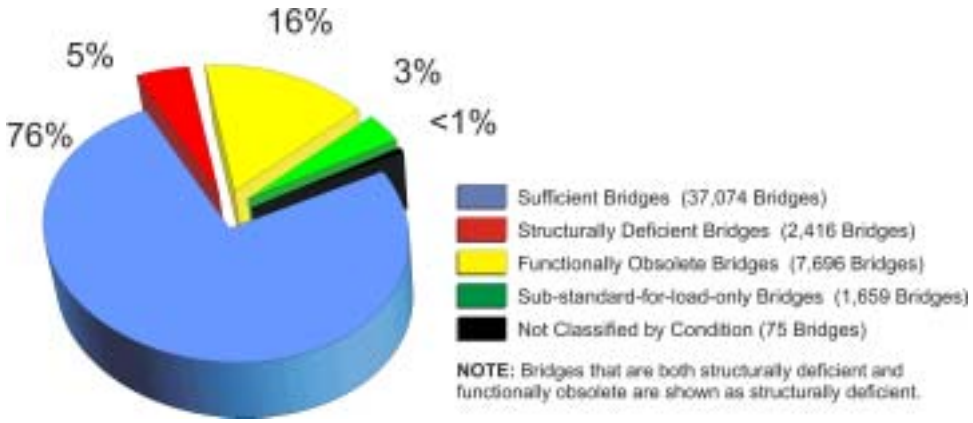


Figure 3-2. Condition of Texas Bridges by Count in September 2004 (48,920 Total)

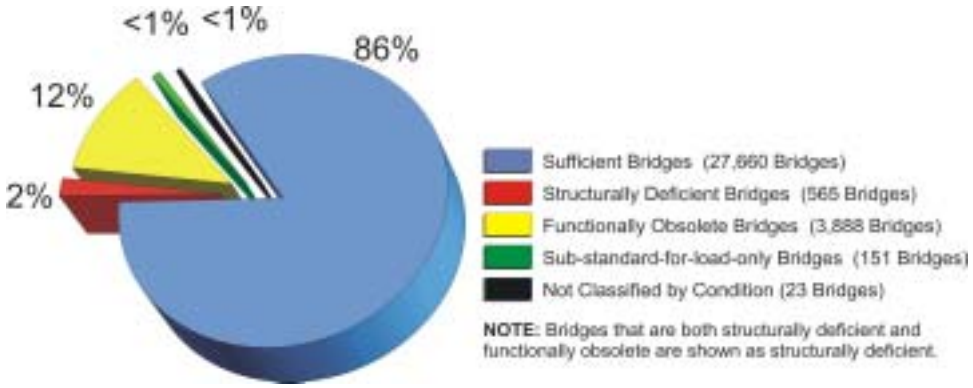


Figure 3-3. Condition of On-system Bridges by Count in September 2004 (32,287 Total)

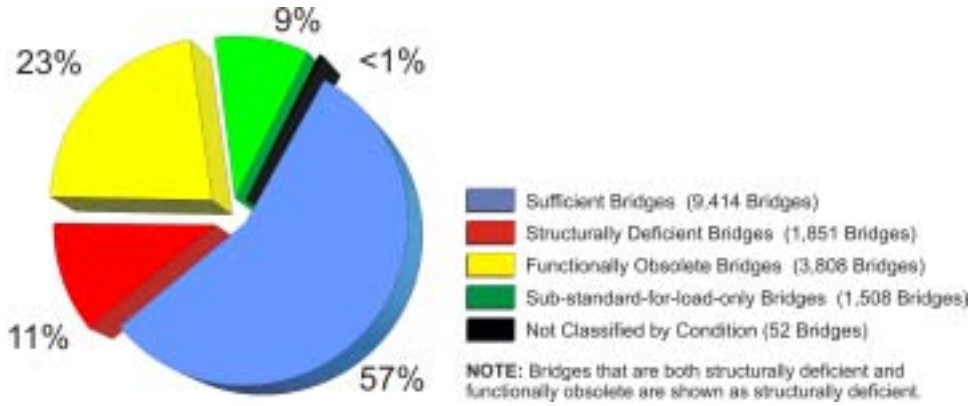


Figure 3-4. Condition of Off-system Bridges by Count in September 2004 (16,633 Total)

The following table shows the condition of on-system Texas span-type bridges in September 2003 and September 2004.

Table 3-1. Condition of On-system Span-type Bridges by Count

Main-span Material	Total Bridges		Sufficient Bridges		Non-sufficient Bridges						Not Classified by Condition	
					Structurally Deficient		Functionally Obsolete		Sub-standard-for-Load-Only			
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Reinforced concrete:	**8,118**	**8,031**	**6,170**	**6,152**	**332**	**279**	**1,482**	**1,487**	**133**	**111**	**1**	**2**
▪ Built before 1950	2,073	2,049	1,557	1,560	125	103	356	352	35	33	0	1
▪ Built 1950-1970	4,580	4,529	3,230	3,218	206	175	1,046	1,058	97	77	1	1
▪ Built after 1970	1,465	1,453	1,383	1,374	1	1	80	77	1	1	0	0
Prestressed concrete:	**7,868**	**8,050**	**7,010**	**7,058**	**43**	**37**	**810**	**942**	**2**	**2**	**3**	**11**
▪ Built before 1950	58	53	54	47	0	1	4	4	0	1	0	0
▪ Built 1950-1970	1,814	1,788	1,441	1,362	27	20	344	405	2	1	0	0
▪ Built after 1970	5,996	6,209	5,515	5,649	16	16	462	533	0	0	3	11
Steel*:	**3,029**	**3,048**	**1,995**	**1,972**	**183**	**173**	**813**	**863**	**35**	**32**	**3**	**8**
▪ Built before 1950	696	718	425	429	79	84	169	180	20	20	3	5
▪ Built 1950-1970	1,746	1,727	1,110	1,064	104	89	517	562	15	12	0	0
▪ Built after 1970	587	603	460	479	0	0	127	121	0	0	0	3
Timber:	**22**	**22**	**7**	**5**	**5**	**6**	**7**	**8**	**3**	**3**	**0**	**0**
▪ Built before 1950	14	14	3	3	4	4	4	4	3	3	0	0
▪ Built 1950-1970	8	8	4	2	1	12	3	4	0	0	0	0
Other:	**62**	**3**	**25**	**1**	**10**	**0**	**25**	**2**	**1**	**0**	**1**	**0**
▪ Built before 1950	42	3	12	1	7	0	21	2	1	0	1	0
▪ Built 1950-1970	13	0	6	0	3	0	4	0	0	0	0	0
▪ Built after 1970	7	0	7	0	0	0	0	0	0	0	0	0
Total	**19,099**	**19,154**	**15,207**	**15,188**	**573**	**495**	**3,137**	**3,302**	**174**	**148**	**8**	**21**

* The FY 2004 counts of on-system span-type steel bridges include trusses and moveable bridges.

The following table shows the condition of on-system Texas bridge-class culverts in September 2003 and September 2004.

Table 3-2. Condition of On-System Bridge-class Culverts by Count

Main-span Material	Total Culverts		Sufficient Culverts		Non-sufficient Culverts						Not Classified by Condition	
					Structurally Deficient		Functionally Obsolete		Sub-standard-for-Load-Only			
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Concrete*:	**12,994**	**13,025**	**12,356**	**12,375**	**69**	**67**	**557**	**579**	**9**	**2**	**3**	**2**
▪ Built before 1950	4,043	4,032	3,832	3,820	32	32	173	178	6	2	0	0
▪ Built 1950-1970	5,961	5,946	5,623	5,596	29	28	304	320	3	0	2	2
▪ Built after 1970	2,990	3,047	2,901	2,959	8	7	80	81	0	0	1	0
Steel:	**34**	**34**	**29**	**29**	**1**	**1**	**4**	**4**	**0**	**0**	**0**	**0**
• Built before 1950	5	5	4	4	0	0	1	1	0	0	0	0
• Built 1950-1970	2	3	2	3	0	0	0	0	0	0	0	0
• Built after 1970	27	26	23	22	1	1	3	3	0	0	0	0
Other:	**79**	**74**	**73**	**68**	**2**	**2**	**3**	**3**	**1**	**1**	**0**	**0**
▪ Built before 1950	48	43	42	37	2	2	3	3	1	1	0	0
▪ Built 1950-1970	6	7	6	7	0	0	0	0	0	0	0	0
▪ Built after 1970	25	24	25	24	0	0	0	0	0	0	0	0
Total	**13,107**	**13,133**	**12,458**	**12,472**	**72**	**70**	**564**	**586**	**10**	**3**	**3**	**2**

* The bridge inspection database does not distinguish reinforced vs. prestressed concrete culverts.

The following table shows the condition of off-system Texas span-type bridges in September 2003 and September 2004.

Table 3-3. Condition of Off-System Span-type Bridges by Count

Main-span Material	Total Bridges		Sufficient Bridges		Non-sufficient Bridges						Not Classified by Condition	
					Structurally Deficient		Functionally Obsolete		Sub-standard-for-Load-Only			
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Reinforced concrete:	**3,012**	**3,023**	**1,746**	**1,793**	**142**	**133**	**920**	**898**	**201**	**193**	**3**	**6**
▪ Built before 1950	705	693	293	285	70	69	258	251	83	86	1	2
▪ Built 1950-1970	1,080	1,065	512	519	61	52	409	398	96	95	2	1
▪ Built after 1970	1,227	1,265	941	989	11	12	253	249	22	12	0	3
Prestressed concrete:	**2,830**	**3,089**	**1,760**	**1,961**	**23**	**18**	**954**	**999**	**86**	**95**	**7**	**16**
▪ Built before 1950	24	19	18	14	1	1	5	3	0	1	0	0
▪ Built 1950-1970	344	334	165	159	11	7	138	136	30	30	0	2
▪ Built after 1970	2,462	2,736	1,577	1,788	11	10	811	860	56	64	7	14
Steel*:	**4,001**	**4,416**	**1,347**	**1,541**	**894**	**1,090**	**1,036**	**1,072**	**718**	**690**	**6**	**23**
▪ Built before 1950	884	1,126	111	113	370	581	231	240	171	173	1	19
▪ Built 1950-1970	849	835	178	180	257	253	279	275	135	127	0	0
▪ Built after 1970	2,268	2,455	1,058	1,248	267	256	526	557	412	390	5	4
Timber:	**1,668**	**1,509**	**210**	**219**	**563**	**547**	**333**	**290**	**554**	**448**	**8**	**5**
▪ Built before 1950	288	244	9	13	151	137	48	37	77	55	3	2
▪ Built 1950-1970	522	430	20	18	235	214	101	91	164	105	2	2
▪ Built after 1970	858	835	181	188	177	196	184	162	313	288	3	1
Other:	**444**	**34**	**28**	**29**	**342**	**0**	**34**	**1**	**21**	**3**	**19**	**1**
▪ Built before 1950	380	10	13	6	307	0	27	1	14	3	19	0
▪ Built 1950-1970	46	3	6	2	31	0	5	0	4	0	0	1
▪ Built after 1970	18	21	9	21	4	0	2	0	3	0	0	0
Total	**11,955**	**12,071**	**5,091**	**5,543**	**1,964**	**1,788**	**3,277**	**3,260**	**1,580**	**1,429**	**43**	**51**

* The FY 2004 counts of on-system span-type steel bridges include trusses and moveable bridges.

The following table shows the condition of off-system Texas bridge-class culverts in September 2003 and September 2004.

Table 3-4. Condition of Off-System Bridge-class Culverts by Count

Main-span Material	Total Culverts		Sufficient Culverts		Non-sufficient Culverts						Not Classified by Condition	
					Structurally Deficient Culverts		Functionally Obsolete Culverts		Sub-standard-for Load-Only Culverts			
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Concrete*:	**4,057**	**4,259**	**3,439**	**3,597**	**55**	**51**	**491**	**537**	**70**	**74**	**2**	**0**
▪ Built before 1950	587	577	375	366	32	31	135	139	45	41	0	0
▪ Built 1950-1970	1,079	1,057	893	868	15	11	150	153	21	25	0	0
▪ Built after 1970	2,391	2,625	2,171	2,363	8	9	206	245	4	8	2	0
Steel:	**143**	**188**	**132**	**176**	**7**	**5**	**3**	**3**	**0**	**3**	**1**	**1**
▪ Built before 1950	13	10	8	9	5	1	0	0	0	0	0	0
▪ Built 1950-1970	19	23	15	17	2	3	2	2	0	1	0	0
▪ Built after 1970	111	155	109	150	0	1	1	1	0	2	1	1
Other:	**96**	**115**	**82**	**98**	**7**	**7**	**5**	**8**	**1**	**2**	**1**	**0**
▪ Built before 1950	73	72	59	59	7	6	5	6	1	1	1	0
▪ Built 1950-1970	4	9	4	7	0	0	0	1	0	1	0	0
▪ Built after 1970	19	34	19	32	0	1	0	1	0	0	0	0
Total	**4,296**	**4,562**	**3,653**	**3,871**	**69**	**63**	**499**	**548**	**71**	**79**	**4**	**1**

* The bridge inspection database does not distinguish reinforced vs. prestressed concrete culverts.

Change in Condition of Bridges during FY 2004. As shown in the following tables, during FY 2004 the number of sufficient bridges increased by 665—5 fewer sufficient on-system bridges but 670 additional sufficient off-system bridges.

Table 3-5. Change in Condition of Sufficient Bridges by Count from September 2000 to September 2002[1]

Condition	September 2000	September 2001	September 2002 (before Update[2])	Change 2000 to 2001	Real Change 2001 to 2002
Sufficient On-system Span Bridges	13,543	13,756	13,799	+ 213	+ 43
Sufficient On-system Bridge-class Culverts	12,257	12,350	12,344	+ 93	– 6
Sufficient Off-system Span Bridges	4,283	4,324	4,491	+ 41	+ 167
Sufficient Off-system Bridge-class Culverts	3,321	3,377	3,540	+ 56	+ 163
All Sufficient Bridges	**33,404**	**33,807**	**34,174**	**+ 403**	**+ 367**

Notes.

[1] In September 2001, bridge records included 83 bridges not classified by condition. In September 2002, bridge records included 68 bridges not classified by condition. In September 2003, bridge records included 58 bridges not classified by condition. In September 2004, bridge records included 75 bridges not classified by condition.

[2] A programming update to routines retrieving data from the Bridge Inspection Database, implemented at the end of FY 2002, affected numbers of bridges identified by condition, particularly noticeable as reduction of the number of structurally deficient and functionally obsolete bridges.

Table 3-6. Change in Condition of Sufficient Bridges by Count from September 2002 to September 2004[1]

Condition	September 2002 (after Update[2])	September 2003	September 2004	Real Change 2002 to 2003	Change 2003 to 2004
Sufficient On-system Span Bridges	15,062	15,207	15,188	+145	–19
Sufficient On-system Bridge-class Culverts	12,369	12,458	12,472	+89	+14
Sufficient Off-system Span Bridges	4,996	5,091	5,543	+95	+452
Sufficient Off-system Bridge-class Culverts	3,598	3,653	3,871	+55	+218
All Sufficient Bridges	**36,025**	**36,409**	**37,074**	**+384**	**+665**

Notes.
[1] In September 2001, bridge records included 83 bridges not classified by condition. In September 2002, bridge records included 68 bridges not classified by condition. In September 2003, bridge records included 58 bridges not classified by condition. In September 2004, bridge records included 75 bridges not classified by condition.
[2] A programming update to routines retrieving data from the Bridge Inspection Database, implemented at the end of FY 2002, affected numbers of bridges identified by condition, particularly noticeable as reduction of the number of structurally deficient and functionally obsolete bridges.

The number of sufficient bridges in FY 2004 increased by 665; however, 463 of those were new-location bridges, that is, bridges that did not exist before September 2003[3].

During FY 2004, the number of non-sufficient bridges decreased by 219—the total included 74 more non-sufficient on-system bridges and 293 fewer non-sufficient off-system bridges. The following figures summarize change in the condition of non-sufficient Texas bridges from September 2000 to September 2004. These numbers include bridges that have recently become non-sufficient.

[3] New-location bridges are added to the inspection database after their post-construction inspection; awarding of contracts for the construction of bridges added to the inspection database may have occurred in previous years.

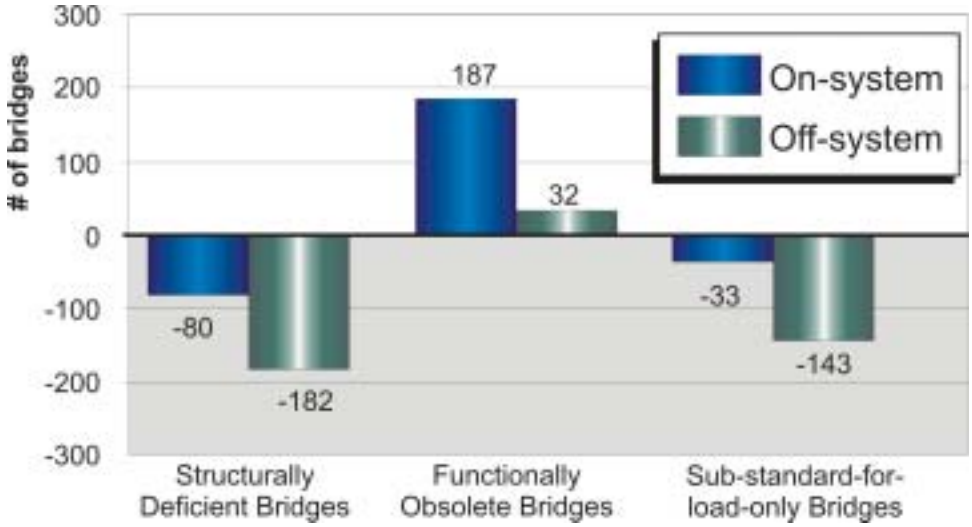


Figure 3-5. Change in Condition of Non-sufficient Bridges during FY 2004

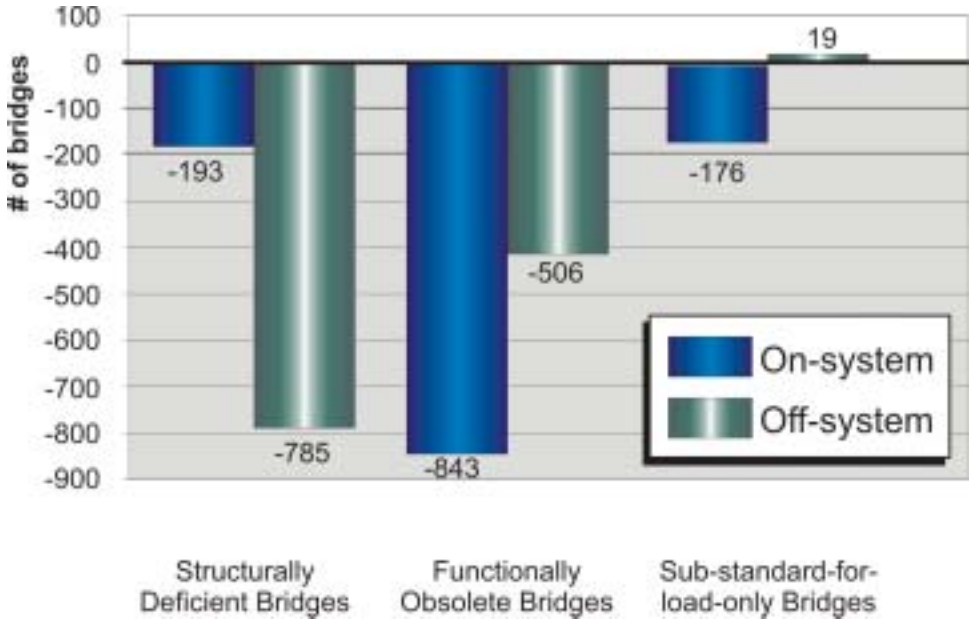


Figure 3-6. Change in Condition of Non-sufficient Bridges between September 2000 and September 2004

The following tables show in more detail the change in condition of non-sufficient bridges from September 2000 to September 2004.

Table 3-7. Change in Condition of Non-sufficient Bridges by Count from September 2000 to September 2002[1]

Condition		September 2000	September 2001	September 2002 (before Update[2])	Change 2000 to 2001	Real Change 2001 to 2002
On-system Span-type Bridges	Structurally Deficient	680	685	622	+ 5	– 63
	Functionally Obsolete	4,153	4,183	4,317	+ 30	+ 134
	Sub-standard for Load Only	293	237	190	– 56	– 47
On-system Bridge-class Culverts	Structurally Deficient	78	78	71	0	– 7
	Functionally Obsolete	578	568	628	– 10	+ 60
	Sub-standard for Load Only	34	35	13	+ 1	– 22
Off-system Span-type Bridges	Structurally Deficient	2,566	2,371	2,161	– 195	– 210
	Functionally Obsolete	3,753	3,844	3,883	+ 91	+ 39
	Sub-standard for Load Only	1,438	1,465	1,400	+ 27	– 65
Off-system Bridge-class Culverts	Structurally Deficient	70	62	74	– 8	+ 12
	Functionally Obsolete	561	611	564	+ 50	– 47
	Sub-standard for Load Only	51	53	51	+ 2	– 2
All Non-sufficient Bridges		**14,255**	**14,192**	**13,974**	**– 63**	**– 218**

Notes.
[1] In September 2001, bridge records included 83 bridges not classified by condition. In September 2002, bridge records included 68 bridges not classified by condition. In September 2003, bridge records included 58 bridges not classified by condition. In September 2004, bridge records included 75 bridges not classified by condition.
[2] A programming update to routines retrieving data from the Bridge Inspection Database, implemented at the end of FY 2002, affected numbers of bridges identified by condition, particularly noticeable as reduction of the number of structurally deficient and functionally obsolete bridges.

Table 3-8. Change in Condition of Non-sufficient Bridges by Count from September 2002 to September 2004[1]

Condition		September 2002 (after Update[2])	September 2003	September 2004	Real Change 2002 to 2003	Change 2003 to 2004
On-system Span-type Bridges	Structurally Deficient	621	573	495	– 48	– 78
	Functionally Obsolete	3,054	3,137	3,302	+ 83	+ 165
	Sub-standard for Load Only	191	174	148	– 17	– 26
On-system Bridge-class Culverts	Structurally Deficient	67	72	70	+ 5	– 2
	Functionally Obsolete	607	564	586	– 43	+ 22
	Sub-standard for Load Only	13	10	3	– 3	– 7
Off-system Span-type Bridges	Structurally Deficient	2,046	1,964	1,788	– 82	– 176
	Functionally Obsolete	3,239	3,277	3,260	+ 38	– 17
	Sub-standard for Load Only	1,649	1,580	1,429	– 69	– 151
Off-system Bridge-class Culverts	Structurally Deficient	71	69	63	– 2	– 6
	Functionally Obsolete	507	499	548	– 8	+ 49
	Sub-standard for Load Only	52	71	79	+ 19	+ 8
All Non-sufficient Bridges		**12,117**	**11,990**	**11,771**	**– 127**	**– 219**

Notes.
[1] In September 2001, bridge records included 83 bridges not classified by condition. In September 2002, bridge records included 68 bridges not classified by condition. In September 2003, bridge records included 58 bridges not classified by condition. In September 2004, bridge records included 75 bridges not classified by condition.
[2] A programming update to routines retrieving data from the Bridge Inspection Database, implemented at the end of FY 2002, affected numbers of bridges identified by condition, particularly noticeable as reduction of the number of structurally deficient and functionally obsolete bridges.

The number of structurally deficient bridges decreased during FY 2004 by 262. The number of functionally obsolete bridges increased by 219. The number of sub-standard-for-load-only bridges decreased by 176.

Load-posted and Closed Bridges. As shown in the following table, in September 2004 Texas had 389 load-posted on-system bridges, down from 430 in September 2003, and 9 closed on-system bridges, the same number as in September 2003. Texas had 3,298 load-posted off-system bridges, up from 3,215 in September 2003, and 198 closed off-system bridges, up from 194 in September 2003.

Table 3-9. Posted and Closed Bridges as of September 2004

District	On-system Bridges			Off-system Bridges		
	Posted	Closed	Recom-mended for Posting/ Closure	Posted	Closed	Recom-mended for Posting/ Closure
Abilene	20	0	0	133	9	26
Amarillo	4	0	13	41	0	0
Atlanta	16	0	4	10	5	28
Austin	22	0	0	70	21	35
Beaumont	8	0	4	127	5	7
Brownwood	17	0	0	75	4	43
Bryan	14	0	2	230	5	10
Childress	31	0	18	65	4	3
Corpus Christi	18	0	5	111	11	0
Dallas	73	3	16	267	27	0
El Paso	7	1	0	84	1	0
Fort Worth	15	0	0	284	15	0
Houston	2	0	0	332	29	1
Laredo	4	0	0	56	3	1
Lubbock	0	0	0	2	0	6
Lufkin	18	0	7	234	8	0
Odessa	2	0	1	1	0	2
Paris	32	0	6	133	10	159
Pharr	2	0	0	27	8	3
San Angelo	3	1	0	21	4	19
San Antonio	3	1	0	66	7	34
Tyler	9	3	5	103	1	104
Waco	49	0	0	419	12	34
Wichita Falls	7	0	0	138	5	0
Yoakum	13	0	0	269	4	52
Total	**389**	**9**	**81**	**3,298**	**198**	**567**

Local governments are legally required to comply with a TxDOT inspector's request to load-post an off-system bridge. Federal law requires that load-posting signs be installed within 90 days of a change in status indicating deficiency of an on-system bridge and within 180 days of a change in status indicating deficiency of an off-system bridge. Posting of a bridge can take several months: TxDOT inspects the bridge, analyzes the inspection data, and makes a formal posting recommendation. For off-system bridges, the local government acknowledges the request and arranges for fabrication of appropriate signs. (At the request of the local government, TxDOT will supply the signs and make them available to the local government for installation.) When the local government installs the signs, a TxDOT inspector verifies compliance. In September 2004, Texas had 81 on-system bridges and 567 off-system bridges recommended for either posting or removal of posting or for closure, or at some stage of getting posting signs erected or removed.

Local governments are encouraged but not legally required to comply with a request to close an off-system bridge. To encourage compliance, TxDOT uses its Participation-Waived Project/Equivalent Match Project (PWP/EMP) program, described in Chapter 5 of this report, to encourage compliance by local governments with recommendations for posting or closure of off-system bridges. Local governments cannot participate in the PWP/EMP program until TxDOT

confirms their compliance with all requests to post or close off-system bridges in their jurisdiction.

Land-locking Bridges. The Texas Transportation Code establishes the minimum load that un-posted Texas bridges must be able to carry. Bridges unable to safely support that minimum load must be load-posted to protect them and the people who travel them from possible harm. This minimum load is the state legal load: in general, the maximum gross load on any truck cannot exceed 80,000 lbs., the maximum load on any tandem axles cannot exceed 34,000 lbs., and the maximum load on any single axle cannot exceed 20,000 lbs.

However, vehicles exceeding posted limits may use load-posted bridges under the following condition: by Texas law, a carrier is eligible for an annual "2060" permit at a fee allowing transport of excess loads on a land-locking bridge. These 2060-permitted loads may be a maximum of 10% per axle and 5% gross over the state legal load. In addition, certain vehicles identified in Chapter 622 of the Texas Transportation Code that exceed posted load capacity can legally use load-posted bridges.

Land-locking bridges limit the movement of legal loads into an area by imposing load restrictions or by being closed. TxDOT identifies a bridge or combination of bridges as land-locking only if no other public road into the area—and it must be a public road shown on a map maintained by TxDOT—is capable of supporting legal loads. As shown in the following table, in September 2004 Texas had 117 land-locking on-system bridges, down 11 from September 2003, and 907 land-locking off-system bridges, down 117 from September 2003.

Permitted vehicles that exceed posted limits may legally use land-locking bridges. Use of land-locking bridges for excess loads can increase risk of damage to the bridge. However, failure to use such a bridge can inhibit commerce in the land-locked region.

Table 3-10. Land-locking Bridges as of September 2004

District	On-system Land-locking Bridges	Off-system Land-locking Bridges
Abilene	0	23
Amarillo	2	6
Atlanta	11	12
Austin	4	16
Beaumont	0	31
Brownwood	4	18
Bryan	5	74
Childress	15	14
Corpus Christi	2	30
Dallas	37	58
El Paso	5	14
Fort Worth	3	55
Houston	0	106
Laredo	0	50
Lubbock	0	0
Lufkin	7	81
Odessa	0	2
Paris	7	43
Pharr	0	9
San Angelo	0	8
San Antonio	0	14
Tyler	3	40
Waco	10	116
Wichita Falls	2	29
Yoakum	0	58
Total	**117**	**907**

In March 2001, TxDOT began tracking information about land-locking bridges and giving special consideration to programming bridge projects that include land-locking bridges.

Chapter 4 – Condition of Span-type Bridges

Focus on Span-type Bridges. Span-type bridges are structurally more complex than bridge-class culverts, which are usually covered with embankment. As shown in Table 3-8, Texas span-type bridges have higher levels of structural deficiency and functional obsolescence than bridge-class culverts.

Analyses of the condition of Texas bridges based on bridge counts, as provided in the previous chapter, focus on the number of sites where bridges pose structural concerns and the potential for traffic disruption. However, span-type bridges vary widely in size, and additional descriptions of the condition of span-type bridges by bridge deck area focus on relative costs for bridge owners to repair, rehabilitate, or replace them.

The following figures show the condition of span-type bridges in September 2004 by count and by deck area. In September 2004, 7% of all span-type bridges were structurally deficient, and 3% of all span-type deck area was structurally deficient.

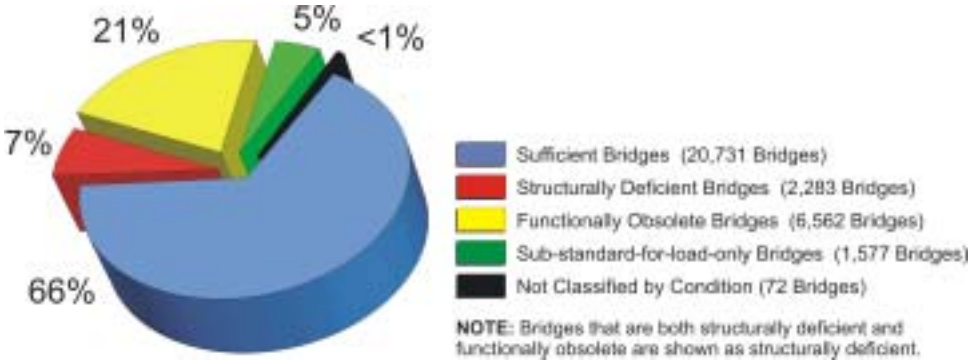


Figure 4-1. Condition of Texas Span-type Bridges by Count in September 2004 (31,225 Total)

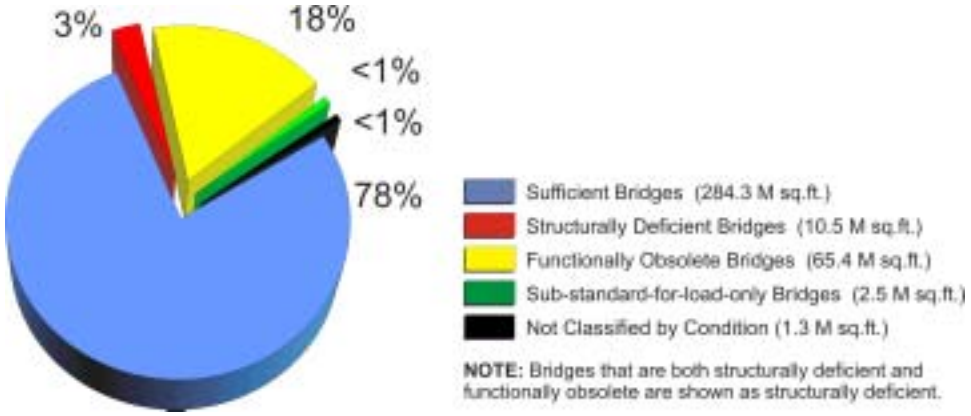


Figure 4-2. Condition of Texas Span-type Bridge Deck Area in September 2004 (362.7 M sq. ft. Total)

The following figures show the condition of on-system span-type bridges in September 2004 by count and by deck area. In September 2004, 2.6% of all on-system span-type bridges were structurally deficient by count, and 2.4% of all on-system span-type bridge deck area was structurally deficient. In September 2004, 17.2% of all on-system span-type bridges were functionally obsolete by count, and 15.1% of all on-system span-type bridge deck area was functionally obsolete. In September 2004, 0.8% of all on-system span-type bridges were sub-standard-for-load-only, and 0.2% of all on-system span-type bridge deck area was sub-standard-for-load-only.

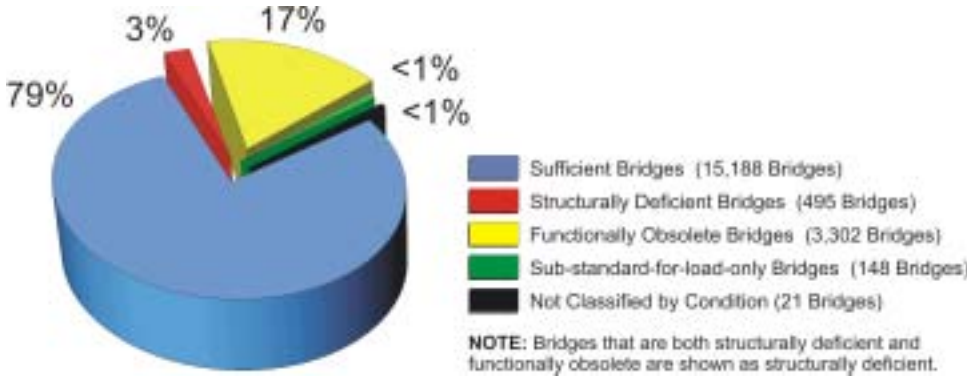


Figure 4-3. Condition of On-system Span-type Bridges by Count in September 2004 (19,154 Total)

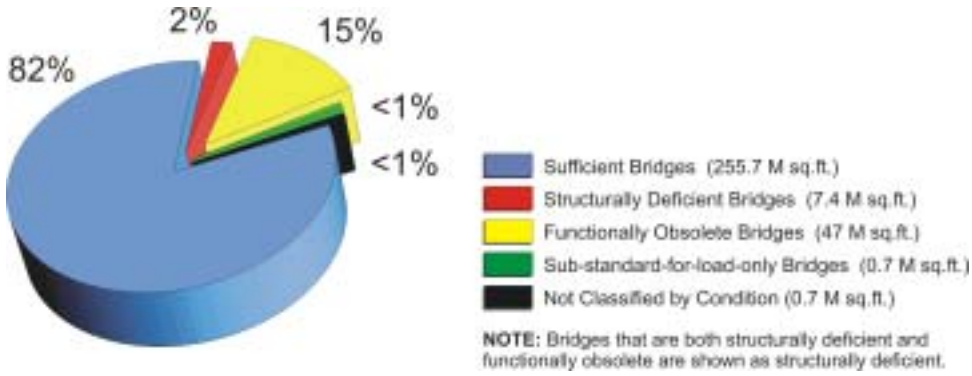


Figure 4-4. Condition of On-system Span-type Bridge Deck Area in September 2004 (311.5 M sq. ft. Total)

The following figures show the condition of off-system span-type bridges in FY 2004 by count and by deck area. Although 14.8% of all off-system span-type bridges were structurally deficient in September 2004, only 5.9% of the total off-system span-type bridge deck area was structurally deficient. However, 27% of all off-system span-type bridges were functionally obsolete, and 34.9% of the total off-system span-type bridge deck area was functionally obsolete. Of all off-system span-type bridges, 11.8% were sub-standard-for-load-only by count, but only 3.6% of the total off-system span-type bridge deck area was sub-standard-for-load-only.

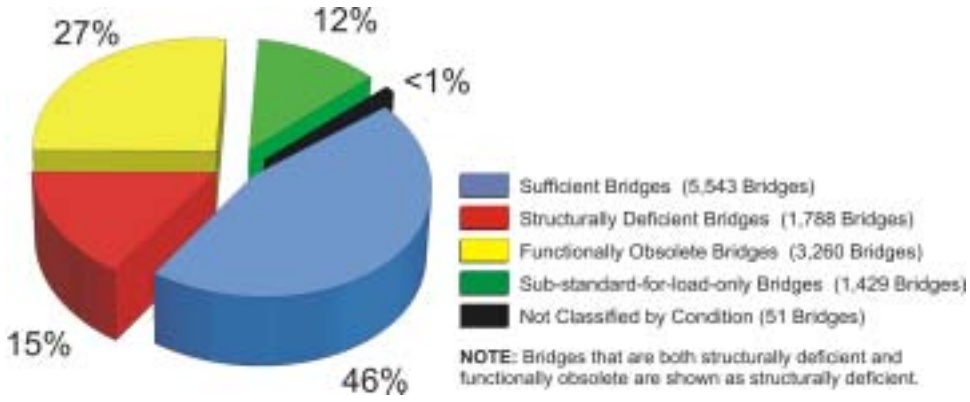


Figure 4-5. Condition of Off-system Span-type Bridges by Count in September 2004 (12,071 Total)

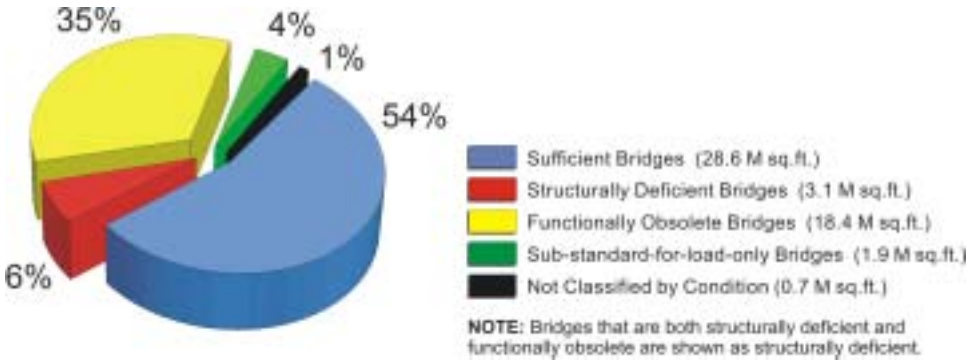


Figure 4-6. Condition of Off-system Span-type Bridge Deck Area in September 2004 (52.7 M sq. ft. Total)

Off-system span-type bridges consistently show higher percentages of non-sufficiency than do on-system span-type bridges. For on-system span-type bridges, the difference in percentage of non-sufficient bridges by condition varies little whether measured by count or deck area. However, for off-system span-type bridges, percentages based on counts are significantly higher than percentages based on deck area for structurally deficient and sub-standard-for-load-only bridges. Percentages based on counts are significantly lower than percentages based on deck area for functionally obsolete off-system span-type bridges.

The following figure shows age and condition of on-system Texas span-type bridges.

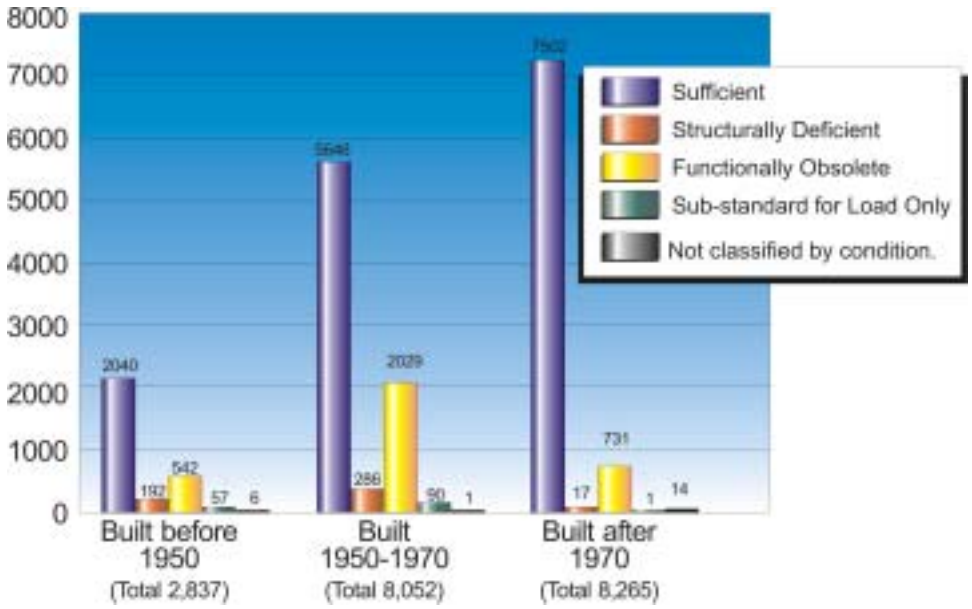


Figure 4-7. Age and Condition of On-system Span-type Bridges by Count in September 2004

The following figure shows age and condition of off-system Texas span-type bridges.

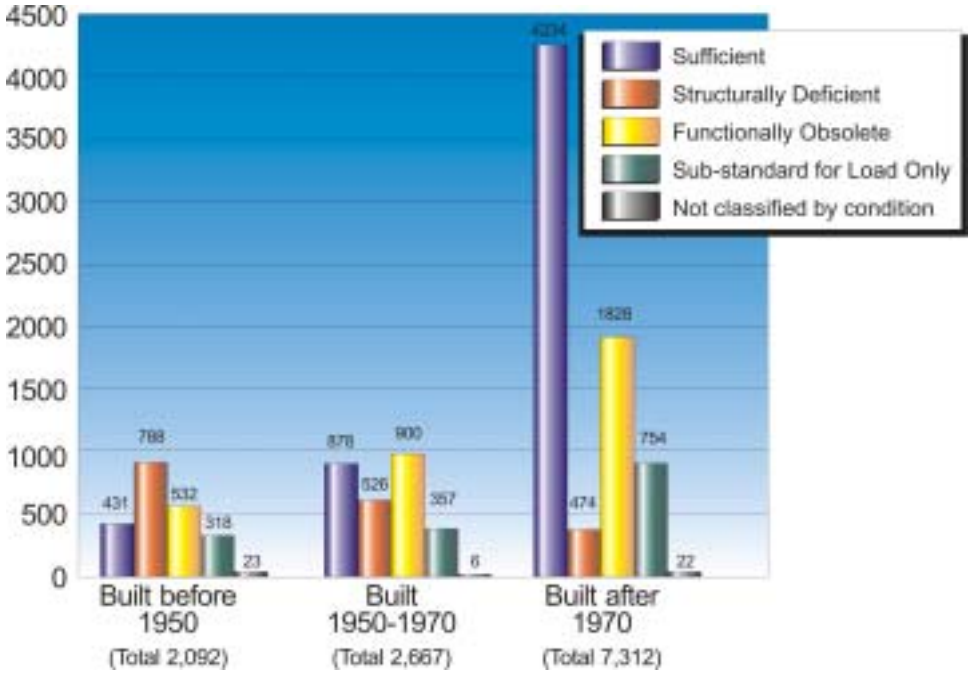


Figure 4-8. Age and Condition of Off-system Span-type Bridges by Count in September 2004

Newer span-type bridges show greater numbers of sufficient bridges. More on-system bridges built between 1950 and 1970 are structurally deficient, functionally obsolete, or sub-standard-for-load-only than older or newer on-system span-type bridges. For off-system bridges, newer span-type bridges show fewer structurally deficient bridges. However, for off-system bridges the

numbers for functionally obsolete and sub-standard-for-load-only bridges increase for newer groups of bridges.

Structurally Deficient Span-type Bridges. As shown in Figures 4-3 and 4-4, in September 2004 Texas had 495 structurally deficient on-system span-type bridges, with a total of 7,428,227 sq. ft. of structurally deficient deck area. This represents a decrease of 78 structurally deficient on-system span-type bridges (see Table 3-8) and a decrease of 836,334 sq. ft.[4] of structurally deficient on-system span-type bridge deck area (see Table 4-16) during FY 2004.

The following tables show the number of on-system structurally deficient span-type bridges and their deck area for each district.

Table 4-1. Count of Structurally Deficient On-system Span-type Bridges by District in September 2004

District	Structurally Deficient Bridges		District	Structurally Deficient Bridges	
	Count	% On-System Count in District		Count	% of On-System Count in District
Abilene	22	3.4%	Laredo	1	0.4%
Amarillo	51	11.8%	Lubbock	1	0.4%
Atlanta	26	5.1%	Lufkin	47	9.4%
Austin	29	3.1%	Odessa	5	1.5%
Beaumont	20	3.0%	Paris	26	3.2%
Brownwood	2	0.5%	Pharr	3	0.7%
Bryan	14	2.1%	San Angelo	2	0.4%
Childress	36	13.7%	San Antonio	11	0.8%
Corpus Christi	15	2.0%	Tyler	13	2.2%
Dallas	39	1.7%	Waco	13	1.4%
El Paso	4	0.8%	Wichita Falls	18	3.4%
Fort Worth	71	5.2%	Yoakum	16	1.9%
Houston	10	0.5%	**Total**	**495**	**2.6%**

[4] See *Report on Texas Bridges as of September 2003.*

Table 4-2. Deck Area of Structurally Deficient On-system Span-type Bridges by District in September 2004

District	Structurally Deficient Bridges		District	Structurally Deficient Bridges	
	Deck Area (sq. ft.)	% of On-System Area in District		Deck Area (sq. ft.)	% of On-System Area in District
Abilene	171,650	3.4%	Laredo	2,370	0.1%
Amarillo	565,748	10.8%	Lubbock	10,256	0.3%
Atlanta	87,769	1.3%	Lufkin	303,681	5.1%
Austin	358,427	2.0%	Odessa	53,169	1.4%
Beaumont	1,044,797	8.6%	Paris	601,503	8.5%
Brownwood	6,618	0.2%	Pharr	7,792	0.1%
Bryan	82,336	1.4%	San Angelo	28,859	0.6%
Childress	323,053	11.7%	San Antonio	112,299	0.4%
Corpus Christi	701,429	6.2%	Tyler	102,145	1.4%
Dallas	764,556	1.7%	Waco	68,915	0.7%
El Paso	18,395	0.3%	Wichita Falls	126,933	1.9%
Fort Worth	964,469	4.4%	Yoakum	60,810	0.6%
Houston	860,248	1.2%	**Total**	**7,428,227**	**2.4%**

The following figure shows the distribution by district of on-system span-type bridge deck area that is structurally deficient.

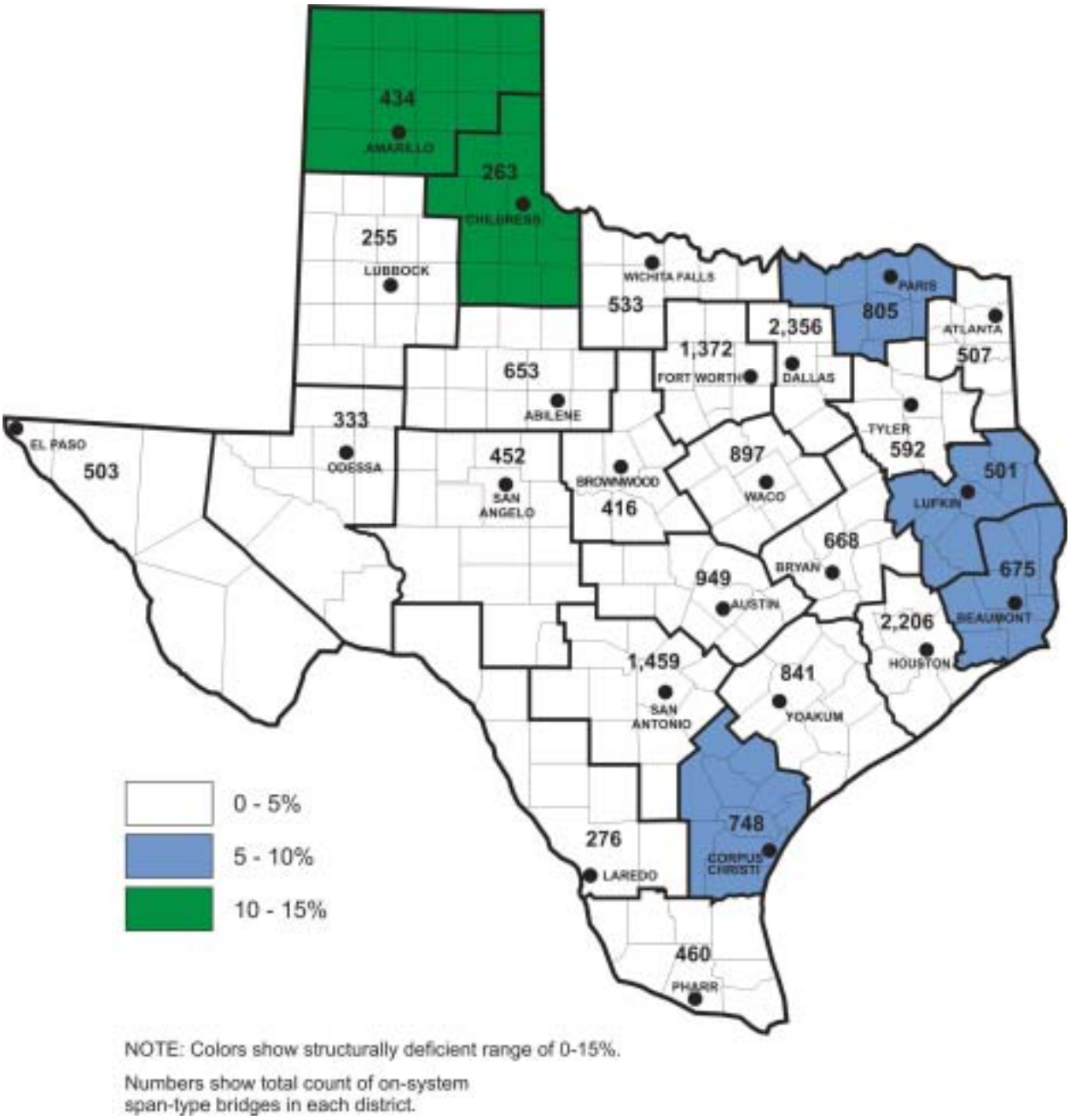


Figure 4-9. Percent of Structurally Deficient On-system Span-type Bridge Deck Area in September 2004 by District

As shown in Figures 4-5 and 4-6, in September 2004 Texas had 1,788 structurally deficient off-system span-type bridges, with a total of 3,118,843 sq. ft. of structurally deficient deck area. This represents a decrease of 176 structurally deficient off-system span-type bridges (see Table 3-8)

and a reduction of 552,852 sq. ft.[5] of structurally deficient off-system span-type bridge deck area (see Table 4-16) since September 2003.

The following tables show the number of off-system structurally deficient span-type bridges and their deck area for each district.

Table 4-3. Count of Structurally Deficient Off-system Span-type Bridges by District in September 2004

District	Structurally Deficient Bridges		District	Structurally Deficient Bridges	
	Count	% of Off-System Count in District		Count	% of Off-System Count in District
Abilene	89	32.4%	Laredo	8	7.3%
Amarillo	15	21.7%	Lubbock	4	26.7%
Atlanta	48	31.2%	Lufkin	114	23.9%
Austin	50	8.3%	Odessa	1	16.7%
Beaumont	52	15.5%	Paris	205	27.2%
Brownwood	55	21.7%	Pharr	21	7.2%
Bryan	103	19.7%	San Angelo	15	19.7%
Childress	47	27.8%	San Antonio	38	8.5%
Corpus Christi	61	24.4%	Tyler	50	11.0%
Dallas	120	8.1%	Waco	179	21.8%
El Paso	5	3.0%	Wichita Falls	79	22.6%
Fort Worth	149	17.0%	Yoakum	129	13.7%
Houston	151	6.9%	**Total/Avg.**	**1,788**	**14.8%**

Table 4-4. Deck Area of Structurally Deficient Off-system Span-type Bridges by District in September 2004

District	Structurally Deficient Bridges		District	Structurally Deficient Bridges	
	Deck Area (sq. ft.)	% of Off-System Area in District		Deck Area (sq. ft.)	% of Off-System Area in District
Abilene	108,005	19.3%	Laredo	8,285	0.8%
Amarillo	153,099	32.4%	Lubbock	3,666	9.6%
Atlanta	38,350	7.9%	Lufkin	79,558	17.3%
Austin	54,598	1.6%	Odessa	629	7.2%
Beaumont	69,083	9.2%	Paris	149,792	18.0%
Brownwood	66,404	14.5%	Pharr	34,799	1.7%
Bryan	94,185	14.8%	San Angelo	45,268	13.5%
Childress	65,814	25.2%	San Antonio	117,447	3.2%
Corpus Christi	130,664	24.7%	Tyler	43,198	6.4%
Dallas	449,351	3.3%	Waco	244,251	13.9%
El Paso	40,449	4.3%	Wichita Falls	60,309	13.3%
Fort Worth	520,006	12.7%	Yoakum	122,864	8.0%
Houston	418,771	3.0%	**Total/Avg.**	**3,118,843**	**5.9%**

[5] See *Report on Texas Bridges as of September 2003.*

The following figure shows the distribution by district of off-system span-type bridge deck area that is structurally deficient.

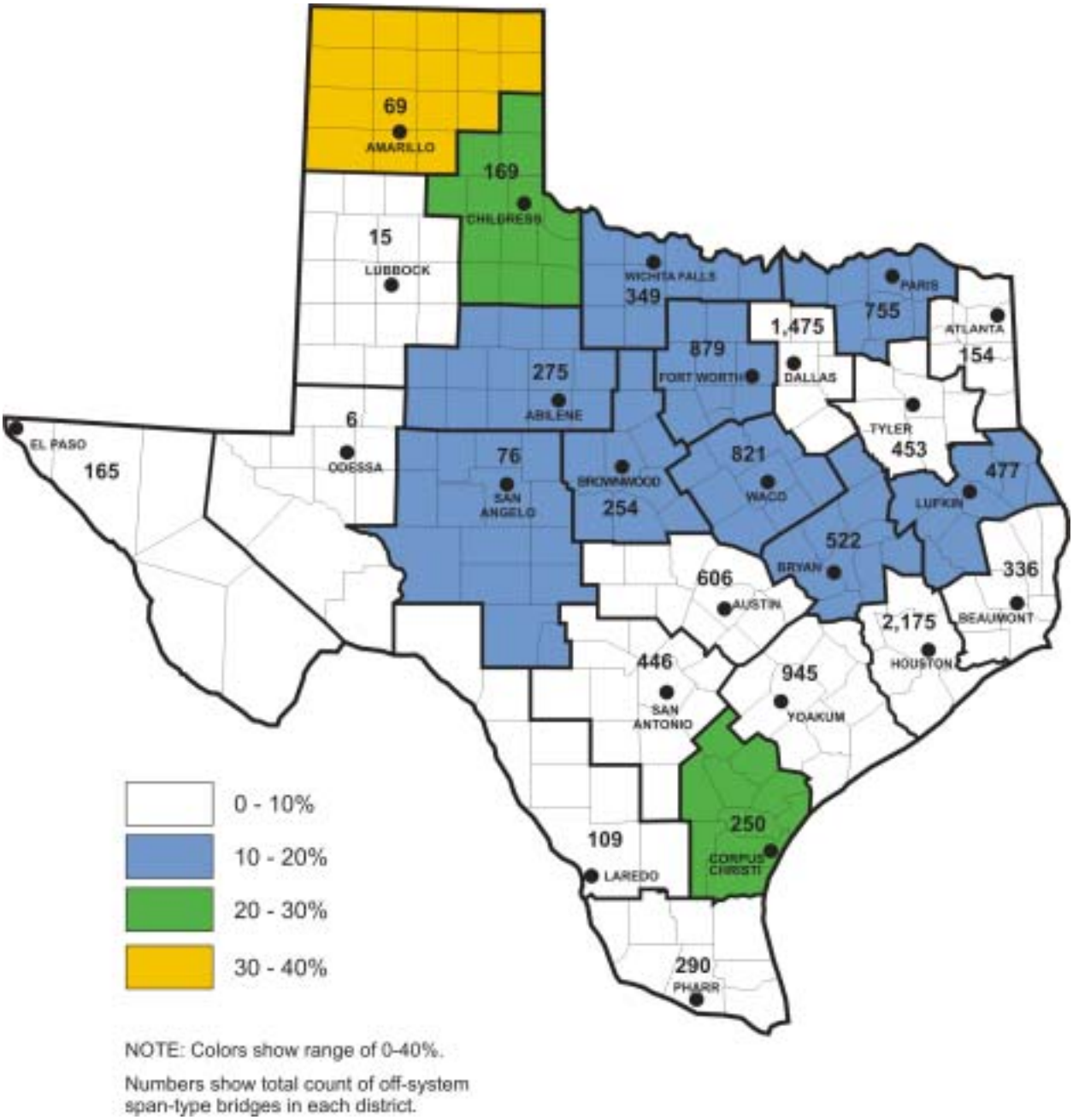


Figure 4-10. Percent of Structurally Deficient Off-system Span-type Bridge Deck Area in September 2004 by District

Functionally Obsolete Span-type Bridges. As shown in Figures 4-3 and 4-4, in September 2004 Texas had 3,302 functionally obsolete on-system span-type bridges, with a total of 46,988,239 sq. ft. of functionally obsolete deck area. This represents a increase of 165

functionally obsolete on-system span-type bridges (see Table 3-8) and a increase of 2,632,935 sq. ft. [6]of functionally obsolete on-system span-type bridge deck area (see Table 4-16) since September 2003.

The following tables show the number of on-system functionally obsolete span-type bridges and their deck area for each district.

Table 4-5. Count of Functionally Obsolete On-system Span-type Bridges by District in September 2004

District	Functionally Obsolete Bridges		District	Functionally Obsolete Bridges	
	Count	% of On-System Count in District		Count	% of On-System Count in District
Abilene	102	15.6%	Laredo	16	5.8%
Amarillo	26	6.0%	Lubbock	38	14.9%
Atlanta	78	15.4%	Lufkin	53	10.6%
Austin	223	23.5%	Odessa	16	4.8%
Beaumont	129	19.1%	Paris	134	16.6%
Brownwood	32	7.7%	Pharr	72	15.7%
Bryan	118	17.7%	San Angelo	35	7.7%
Childress	3	1.1%	San Antonio	254	17.4%
Corpus Christi	80	10.7%	Tyler	74	12.5%
Dallas	761	32.3%	Waco	148	16.5%
El Paso	93	18.5%	Wichita Falls	41	7.7%
Fort Worth	211	15.4%	Yoakum	116	13.8%
Houston	449	20.4%	**Total**	**3,302**	**17.2%**

[6] See *Report on Texas Bridges as of September 2003.*

Table 4-6. Deck Area of Functionally Obsolete On-system Span-type Bridges by District in September 2004

District	Functionally Obsolete Bridges		District	Functionally Obsolete Bridges	
	Deck Area (Sq. Ft.)	% of On-System Area in District		Deck Area (Sq. Ft.)	% of District On-System Area in District
Abilene	632,371	12.5%	Laredo	155,113	4.6%
Amarillo	226,777	4.3%	Lubbock	515,712	14.4%
Atlanta	740,948	10.6%	Lufkin	293,574	4.9%
Austin	2,624,098	14.6%	Odessa	134,993	3.6%
Beaumont	1,421,799	11.8%	Paris	653,837	9.2%
Brownwood	202,453	6.7%	Pharr	920,593	12.2%
Bryan	709,009	12.2%	San Angelo	455,268	9.0%
Childress	24,620	0.9%	San Antonio	4,681,316	18.8%
Corpus Christi	1,365,042	12.1%	Tyler	776,248	10.8%
Dallas	10,779,465	23.4%	Waco	1,894,607	19.6%
El Paso	1,785,014	25.4%	Wichita Falls	399,596	6.1%
Fort Worth	2,576,234	11.7%	Yoakum	1,794,006	18.1%
Houston	11,225,549	15.7%	**Total**	**46,988,239**	**15.1%**

The following figure shows the distribution by district of on-system span-type bridge deck area that is functionally obsolete.

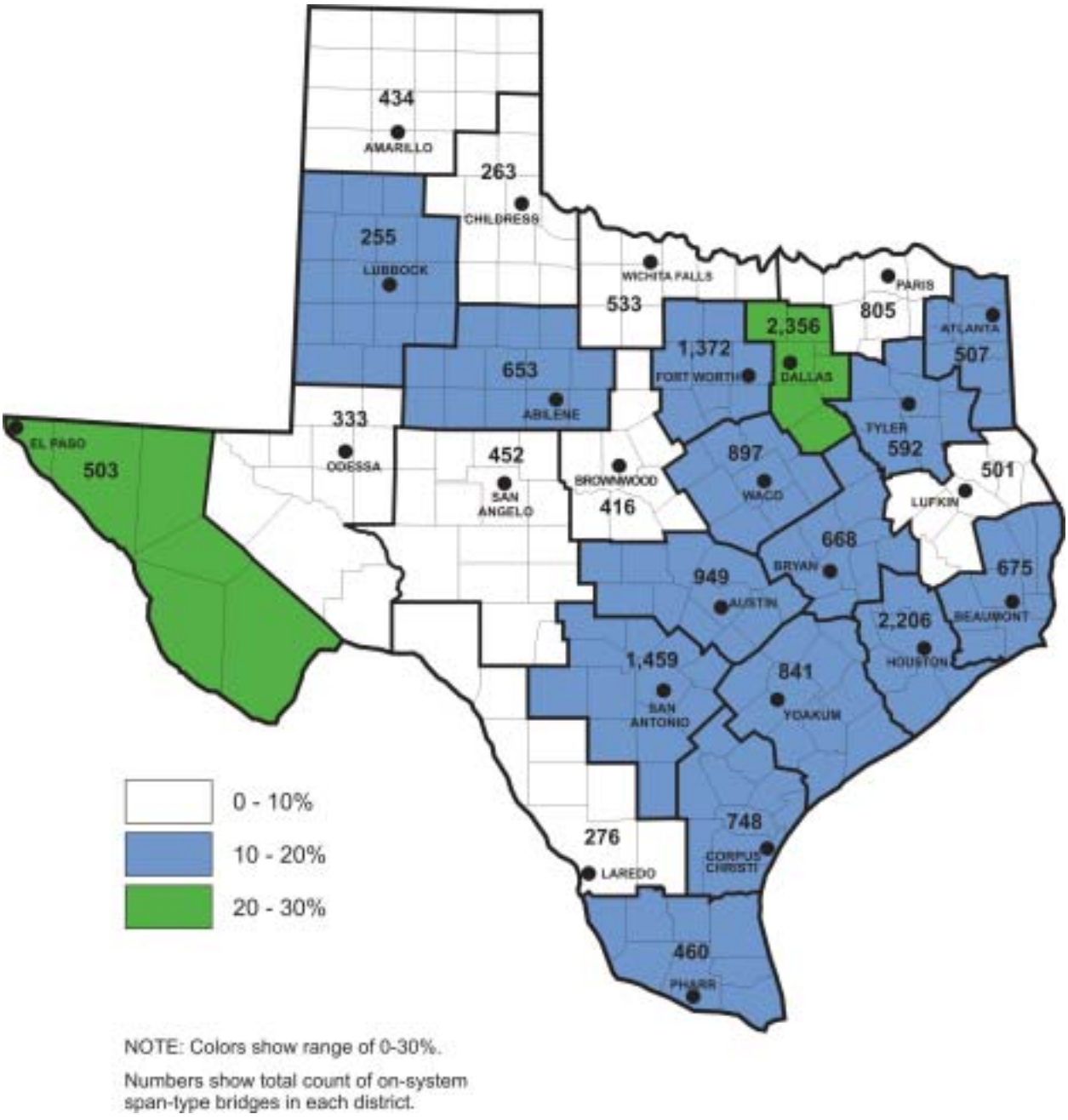


Figure 4-11. Percent of Functionally Obsolete On-system Span-type Bridge Deck Area in September 2004 by District

As shown in Figures 4-5 and 4-6, in September 2004 Texas had 3,260 functionally obsolete off-system span-type bridges, with a total of 18,442,468 sq. ft. of functionally obsolete deck area. This represents a decrease of 17 functionally obsolete off-system span-type bridges (see Table

3-8) and an increase of 1,564,967 sq. ft.[7] of functionally obsolete off-system span-type bridge deck area (see Table 4-16) since September 2003.

The following tables show the number of off-system functionally obsolete span-type bridges and their deck area for each district.

Table 4-7. Count of Functionally Obsolete Off-system Span-type Bridges by District in September 2004

District	Functionally Obsolete Bridges		District	Functionally Obsolete	
	Count	% of Off-System Count in District		Count	% of Off-System Count in District
Abilene	31	11.3%	Laredo	41	37.6%
Amarillo	12	17.4%	Lubbock	2	13.3%
Atlanta	34	22.1%	Lufkin	84	17.6%
Austin	125	20.6%	Odessa	0	0.0%
Beaumont	81	24.1%	Paris	122	16.2%
Brownwood	45	17.7%	Pharr	58	20.0%
Bryan	108	20.7%	San Angelo	17	22.4%
Childress	12	7.1%	San Antonio	150	33.6%
Corpus Christi	40	16.0%	Tyler	96	21.2%
Dallas	574	38.9%	Waco	177	21.6%
El Paso	24	14.5%	Wichita Falls	55	15.8%
Fort Worth	242	27.5%	Yoakum	210	22.2%
Houston	920	42.3%	**Total/Avg.**	**3,260**	**27.0%**

Table 4-8. Deck Area of Functionally Obsolete Off-system Span-type Bridges by District in September 2004

District	Functionally Obsolete Bridges		District	Functionally Obsolete Bridges	
	Deck Area (sq. ft.)	% of Off-System Area in District		Deck Area (sq. ft.)	% of Off-System Area in District
Abilene	30,730	5.5%	Laredo	291,045	28.2%
Amarillo	96,725	20.5%	Lubbock	3,942	10.3%
Atlanta	192,759	39.8%	Lufkin	75,173	16.4%
Austin	703,324	20.7%	Odessa	0	0.0%
Beaumont	156,968	20.9%	Paris	107,570	13.0%
Brownwood	70,796	15.4%	Pharr	1,147,226	57.6%
Bryan	100,625	15.8%	San Angelo	60,903	18.1%
Childress	8,477	3.3%	San Antonio	1,258,472	34.7%
Corpus Christi	77,056	14.6%	Tyler	102,924	15.4%
Dallas	5,251,025	39.0%	Waco	386,362	22.0%
El Paso	131,247	14.0%	Wichita Falls	69,286	15.3%
Fort Worth	1,510,519	36.8%	Yoakum	308,037	20.2%
Houston	6,301,281	45.5%	**Total/Avg.**	**18,442,468**	**35.0%**

[7] See *Report on Texas Bridges as of September 2003.*

The following figure shows the distribution by district of off-system span-type bridge deck area that is functionally obsolete.

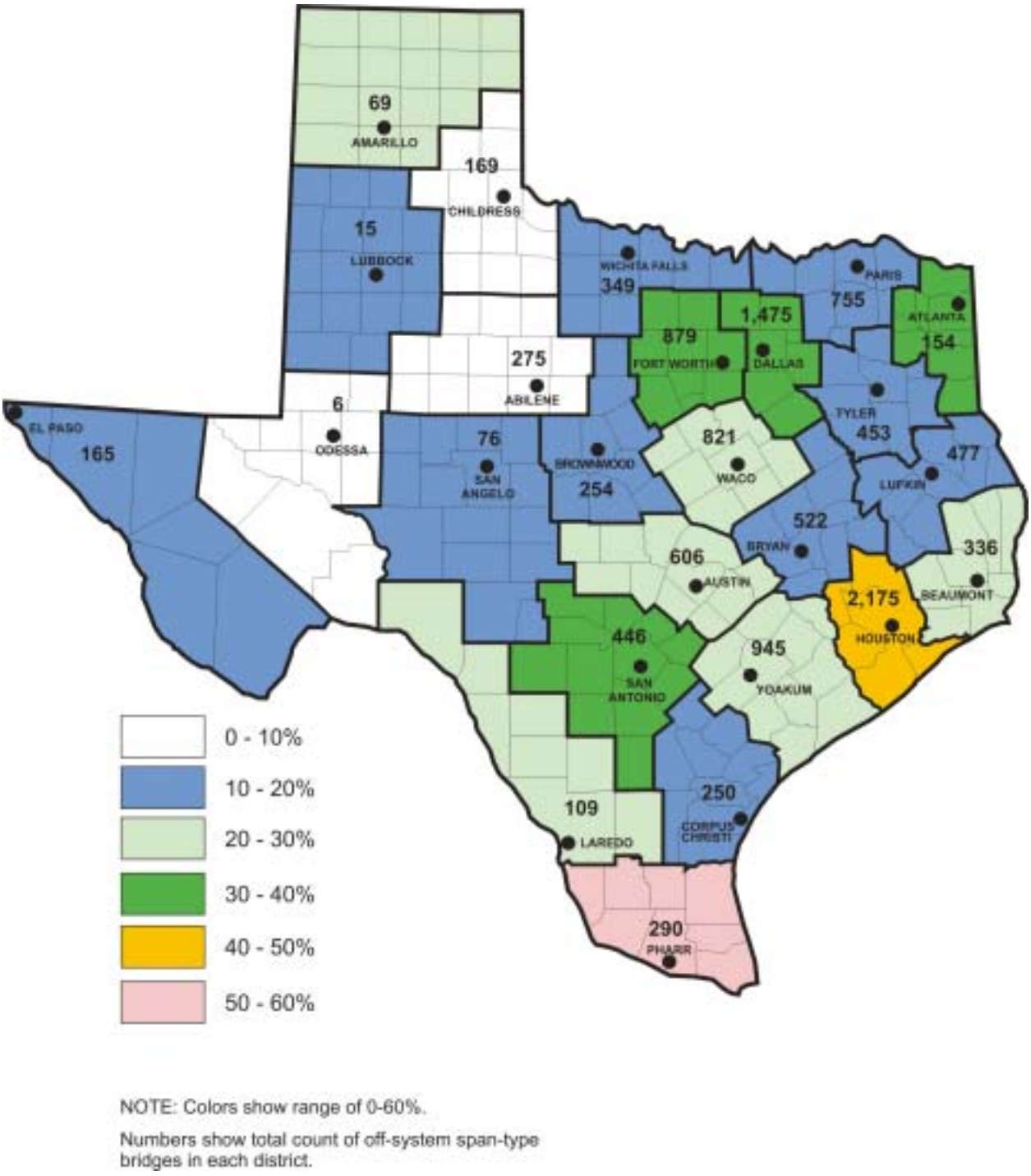


Figure 4-12. Percent of Functionally Obsolete Off-system Span-type Bridge Deck Area in September 2004 by District

Sub-standard-for-Load-Only Span-type Bridges. As shown in Figures 4-3 and 4-4, in September 2004 Texas had 148 sub-standard-for-load-only on-system span-type bridges, with a total of 671,596 sq. ft. of sub-standard-for-load-only deck area. This represents a decrease of 26 sub-standard-for-load-only on-system span-type bridges (see Table 3-8) and a decrease of 98,291 sq. ft.[8] of sub-standard-for-load-only on-system span-type bridge deck area (see Table 4-16) since September 2003.

The following tables show the number of on-system sub-standard-for-load-only bridges and their deck area for each district.

Table 4-9. Count of Sub-standard-for-Load-Only On-system Span-type Bridges by District in September 2004

District	Sub-standard-for-Load-Only Bridges		District	Sub-standard-for-Load-Only Bridges	
	Count	% of On-System Count in District		Count	% of On-System Count in District
Abilene	12	1.8%	Laredo	2	0.7%
Amarillo	2	0.5%	Lubbock	0	0.0%
Atlanta	0	0.0%	Lufkin	8	1.6%
Austin	7	0.7%	Odessa	0	0.0%
Beaumont	4	0.6%	Paris	15	1.9%
Brownwood	7	1.7%	Pharr	0	0.0%
Bryan	4	0.6%	San Angelo	2	0.4%
Childress	20	7.6%	San Antonio	0	0.0%
Corpus Christi	10	1.3%	Tyler	2	0.3%
Dallas	15	0.6%	Waco	22	2.5%
El Paso	5	1.0%	Wichita Falls	5	0.9%
Fort Worth	5	0.4%	Yoakum	1	0.1%
Houston	0	0.0%	**Total/Avg.**	**148**	**0.8%**

[8] See *Report on Texas Bridges as of September 2003.*

Table 4-10. Deck Area of Sub-standard-for-Load-Only On-system Span-type Bridges by District in September 2004

District	Sub-standard-for-Load-Only Bridges		District	Sub-standard-for-Load-Only Bridges	
	Deck Area (sq. ft.)	% of On-System Area in District		Deck Area (sq. ft.)	% of On-System Area in District
Abilene	33,886	0.7%	Laredo	6,099	0.2%
Amarillo	15,965	0.3%	Lubbock	0	0.0%
Atlanta	0	0.0%	Lufkin	27,083	0.5%
Austin	21,024	0.1%	Odessa	0	0.0%
Beaumont	49,785	0.4%	Paris	50,198	0.7%
Brownwood	15,942	0.5%	Pharr	0	0.0%
Bryan	24,387	0.4%	San Angelo	6,535	0.1%
Childress	68,274	2.5%	San Antonio	0	0.0%
Corpus Christi	20,121	0.2%	Tyler	7,392	0.1%
Dallas	185,300	0.4%	Waco	56,236	0.6%
El Paso	5,457	0.1%	Wichita Falls	43,893	0.7%
Fort Worth	31,471	0.1%	Yoakum	2,550	0.0%
Houston	0	0.0%	**Total/Avg.**	**671,596**	**0.2%**

The following figure shows the distribution by district of on-system span-type bridge deck area that is sub-standard for load only.

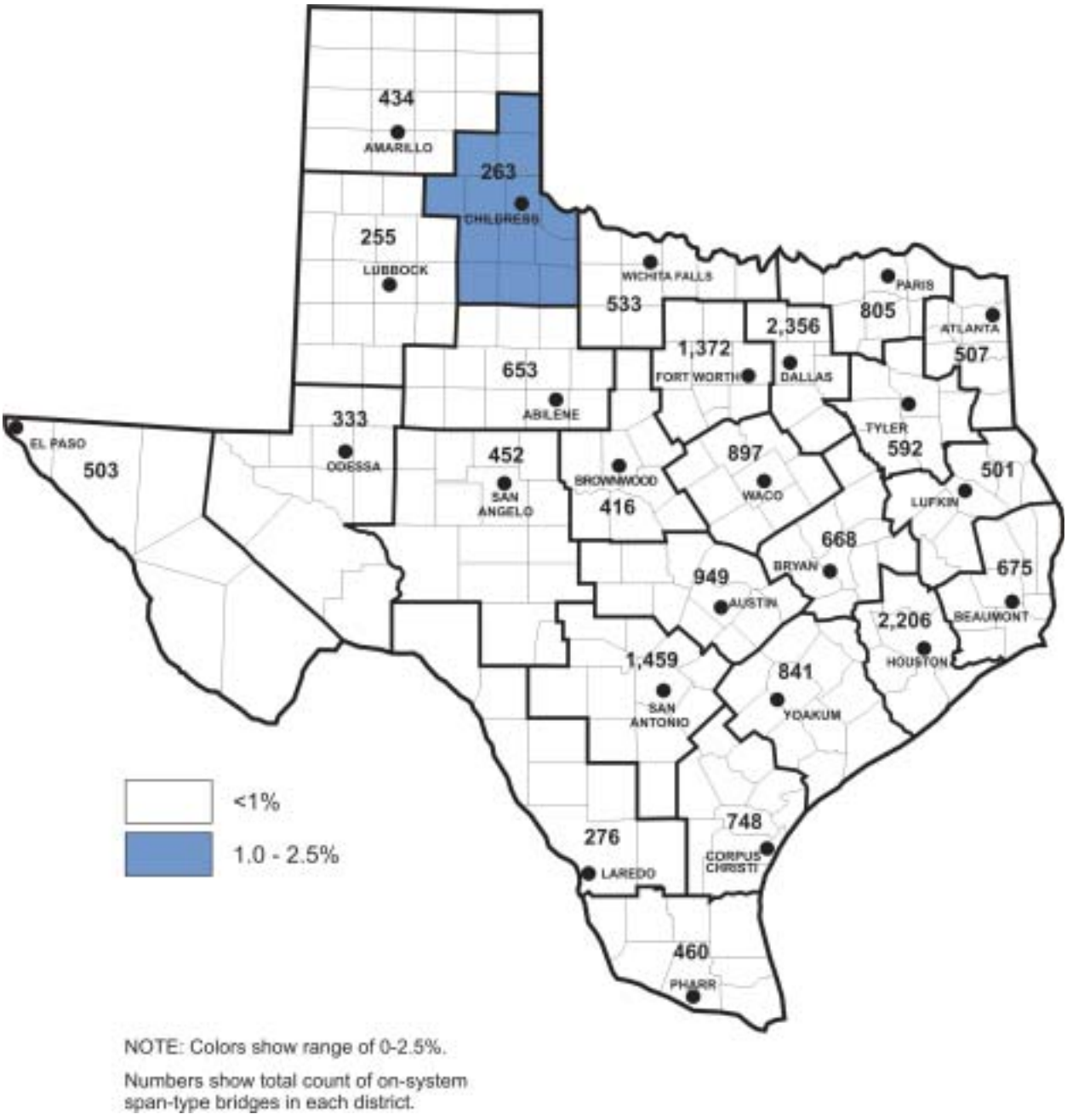


Figure 4-13. Percent of Sub-standard-for-Load-Only On-system Span-type Bridge Deck Area in September 2004 by District

As shown in Figures 4-5 and 4-6, in September 2004 Texas had 1,429 sub-standard-for-load-only off-system span-type bridges, with a total of 1,861,877 sq. ft. of sub-standard-for-load-only deck area. This represents an decrease of 151 sub-standard-for-load-only off-system span-type

bridges (see Table 3-8) and a decrease of 254,837 sq. ft.[9] of sub-standard-for-load-only off-system span-type bridge deck area (see Table 4-16) since September 2003.

The following tables show the number of off-system sub-standard-for-load-only bridges and their deck area for each district.

Table 4-11. Count of Sub-standard-for-Load-Only Off-system Span-type Bridges by District in September 2004

District	Sub-standard-for-Load-Only Bridges		District	Sub-standard-for-Load-Only Bridges	
	Count	% of Off-System Count in District		Count	% of Off-System Count in District
Abilene	60	21.8%	Laredo	17	15.6%
Amarillo	21	30.4%	Lubbock	3	20.0%
Atlanta	8	5.2%	Lufkin	109	22.9%
Austin	29	4.8%	Odessa	2	33.3%
Beaumont	69	20.5%	Paris	78	10.3%
Brownwood	35	13.8%	Pharr	9	3.1%
Bryan	82	15.7%	San Angelo	16	21.1%
Childress	18	10.7%	San Antonio	27	6.1%
Corpus Christi	41	16.4%	Tyler	97	21.4%
Dallas	83	5.6%	Waco	152	18.5%
El Paso	68	41.2%	Wichita Falls	47	13.5%
Fort Worth	80	9.1%	Yoakum	135	14.3%
Houston	143	6.6%	**Total/Avg.**	**1,429**	**11.8%**

Table 4-12. Deck Area of Sub-standard-for-Load-Only Off-system Span-type Bridges by District in September 2004

District	Sub-standard-for-Load-Only Bridges		District	Sub-standard-for-Load-Only Bridges	
	Deck Area (sq. ft.)	% of Off-System Area in District		Deck Area (sq. ft.)	% of Off-System Area in District
Abilene	104,851	18.8%	Laredo	13,562	1.3%
Amarillo	64,739	13.7%	Lubbock	2,540	6.7%
Atlanta	7,554	1.6%	Lufkin	72,164	15.7%
Austin	29,164	0.9%	Odessa	1,105	12.7%
Beaumont	110,334	14.7%	Paris	56,311	6.8%
Brownwood	34,347	7.5%	Pharr	14,552	0.7%
Bryan	62,562	9.8%	San Angelo	39,424	11.7%
Childress	14,628	5.6%	San Antonio	63,903	1.8%
Corpus Christi	51,986	9.8%	Tyler	85,103	12.7%
Dallas	111,906	0.8%	Waco	195,229	11.1%
El Paso	147,858	15.8%	Wichita Falls	39,757	8.8%
Fort Worth	118,417	2.9%	Yoakum	129,271	8.5%
Houston	290,609	2.1%	**Total/Avg.**	**1,861,877**	**3.5%**

[9] See *Report on Texas Bridges as of September 2003.*

The following figure shows the distribution by district based on deck area of off-system span-type bridges that are sub-standard for load only.

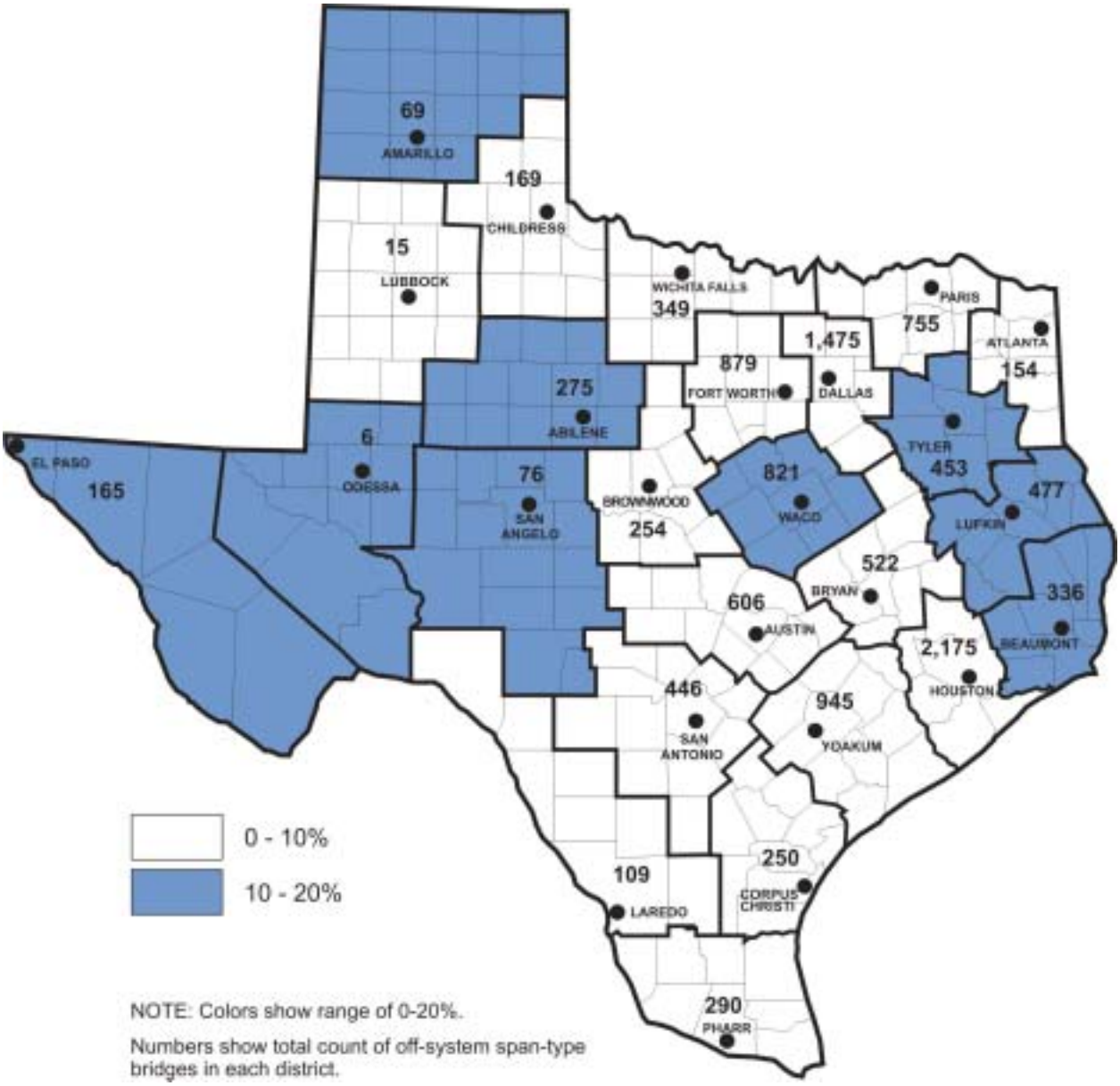


Figure 4-14. Percent of Sub-standard-for-Load-Only Off-system Span-type Bridge Deck Area in September 2004 by District

Change in Condition of Span-type Bridges during FY 2004. As shown in Table 3-6, during FY 2004 the number of sufficient span-type bridges increased by 433—19 fewer sufficient on-system bridges and 452 additional sufficient off-system bridges.

As shown in Table 3-8, during FY 2004 the number of non-sufficient span-type bridges decreased by 283—61 more non-sufficient on-system span-type bridges and 344 fewer non-sufficient off-system span-type bridges. The following figures break down this change in the condition of non-sufficiency by count in FY 2004.

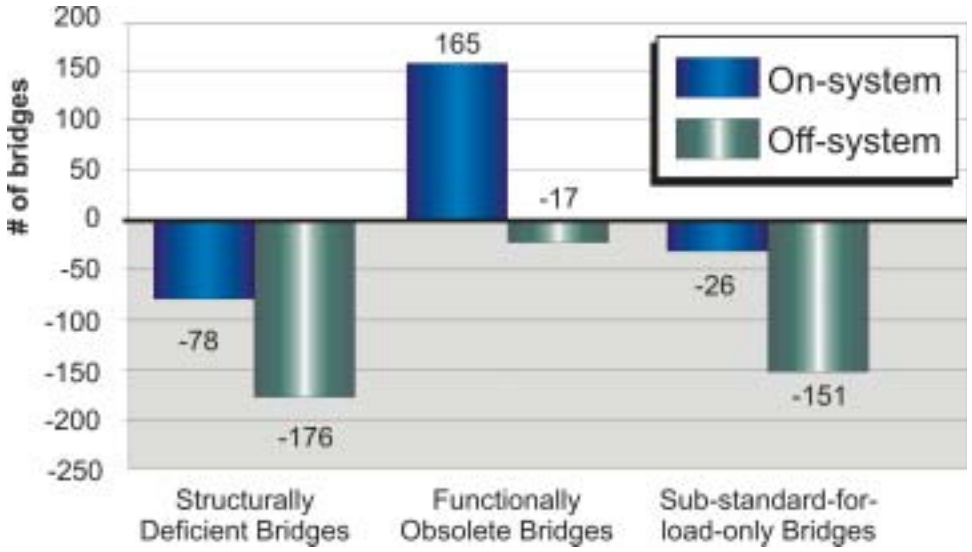


Figure 4-15. Change in Condition of Non-sufficient Span-type Bridges by Count – September 2003 to September 2004

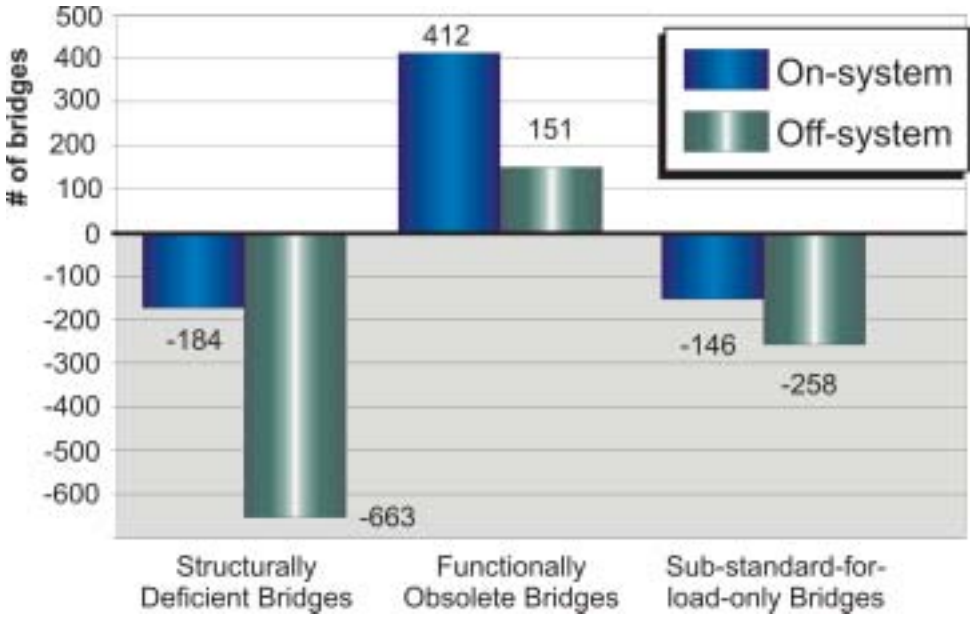


Figure 4-16. Change in Condition of Non-sufficient Span-type Bridges by Count – September 2000 to September 2004

As shown in the following tables, during FY 2004 sufficient bridge deck area increased by 3,990,896 sq. ft.—1,508,575 sq. ft. on-system and 2,482,321 sq. ft off-system.

Table 4-13. Change in Condition of Sufficient Span-type Bridge Deck Area from September 2001 to September 2002

Condition	September 2001	September 2002 (before Update[1])	Real Change 2001 to 2002
Sufficient On-system Span-type Bridge Deck Area	206,348,068 sq. ft.	210,313,577 sq. ft.	+ 39,965,509 sq. ft.
Sufficient Off-system Bridge Deck Area	19,371,659 sq. ft.	19,816,834 sq. ft	+ 445,175 sq. ft.
All Sufficient Bridge Deck Area	**225,719,727 sq. ft.**	**230,130,411 sq. ft.**	**+ 4,410,684 sq. ft.**

[1] A programming update to routines retrieving data from the Bridge Inspection Database, implemented at the end of FY 2002, affected numbers of bridges identified by condition, particularly noticeable as reduction of the number of structurally deficient and functionally obsolete bridges.

Table 4-14. Change in Condition of Sufficient Span-type Bridge Deck Area from September 2002 to September 2004

Condition	September 2002 (after Update[1])	September 2003	September 2004	Real Change 2002 to 2003	Change 2003 to 2004
Sufficient On-system Span-type Bridge Deck Area	246,272,321 sq. ft.	254,208,160 sq. ft.	255,716,735 sq. ft.	+ 7,935,839 sq. ft.	+ 1,508,575 sq. ft.
Sufficient Off-system Bridge Deck Area	24,096,736 sq. ft	26,077,389 sq. ft.	28,559,710 sq. ft.	+ 1,980,653 sq. ft.	+ 2,482,321 sq. ft.
All Sufficient Bridge Deck Area	**270,369,057 sq. ft.**	**280,285,549 sq. ft.**	**284,276,445 sq. ft.**	**+ 9,916,492 sq. ft.**	**+ 3,990,896 sq. ft.**

[1] A programming update to routines retrieving data from the Bridge Inspection Database, implemented at the end of FY 2002, affected numbers of bridges identified by condition, particularly noticeable as reduction of the number of structurally deficient and functionally obsolete bridges.

In FY 2004, 2,455,588 sq. ft. of non-sufficient span-type deck area was added to the bridge inventory, as shown in Table 4-16—an additional 1,698,310 sq. ft of non-sufficient on-system deck area and an additional 757,278 sq. ft. of off-system deck area. The following figure summarizes change in the condition of non-sufficient bridge deck area from September 2003 to September 2004. Most of the additional non-sufficient bridge deck area was on on-system functionally obsolete bridges.

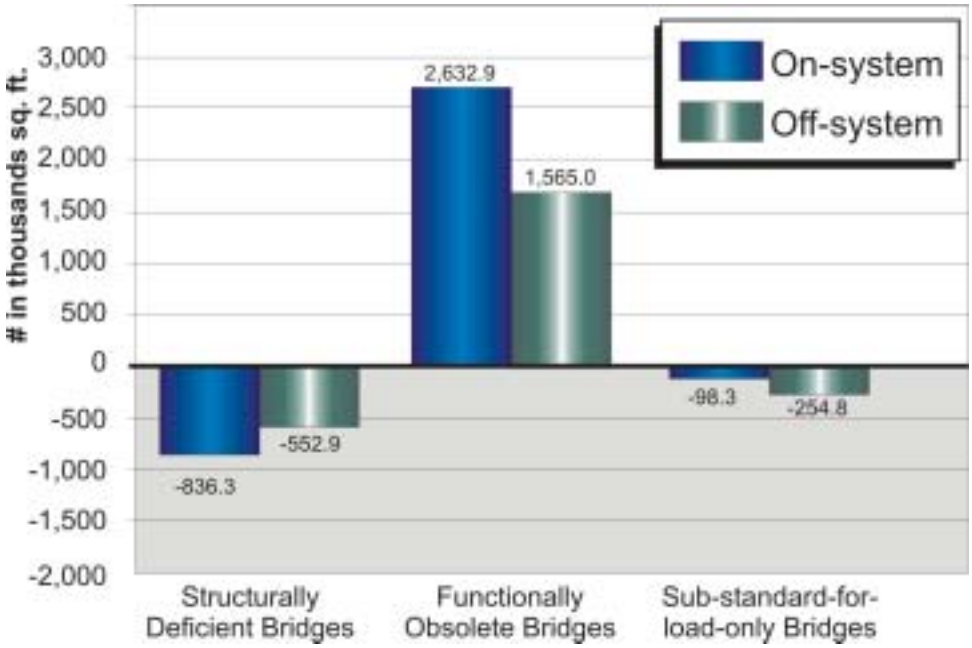


Figure 4-17. Change in Condition of Span-type Bridges by Deck Area – September 2003 to September 2004

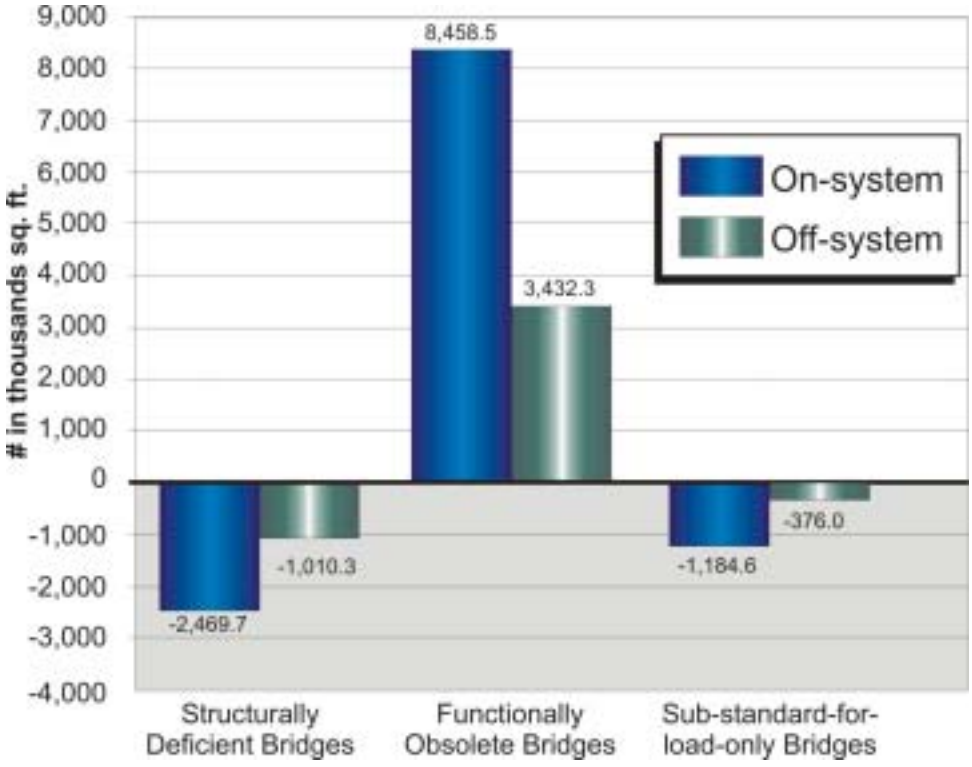


Figure 4-18. Change in Condition of Span-type Bridges by Deck Area – September 2000 to September 2004

The following tables show in more detail the change in condition of non-sufficient bridge deck area from September 2000 to September 2004.

Table 4-15. Change in Condition of Non-sufficient Span-type Bridge Deck Area from September 2001 to September 2002

Condition		September 2001	September 2002 (before Update[1])	Real Change 2001 to 2002
On-system Span Bridges	Structurally Deficient	9,939,349 sq. ft.	9,703,126 sq. ft.	– 236,223 sq. ft.
	Functionally Obsolete	76,780,604 sq. ft.	78,018,216 sq. ft.	+ 1,237,612 sq. ft.
	Sub-standard for Load Only	1,436,678 sq. ft.	866,970 sq. ft.	– 569,708 sq. ft.
Off-system Span Bridges	Structurally Deficient	3,850,795 sq. ft.	3,787,927 sq. ft.	– 62,868 sq. ft.
	Functionally Obsolete	20,622,099 sq. ft.	21,311,692 sq. ft.	+ 689,593 sq. ft.
	Sub-standard for Load Only	2,049,699 sq. ft.	2,038,946 sq. ft.	– 10,753 sq. ft.
All Non-sufficient Bridge Deck Area		**114,679,224 sq. ft.**	**115,726,877 sq. ft.**	**+ 1,047,653 sq. ft.**

[1] A programming update to routines retrieving data from the Bridge Inspection Database, implemented at the end of FY 2002, affected numbers of bridges identified by condition, particularly noticeable as reduction of the number of structurally deficient and functionally obsolete bridges.

Table 4-16. Change in Condition of Non-sufficient Span-type Bridge Deck Area from September 2002 to September 2004

Condition		Sept. 2002 (after Update[1])	Sept. 2003	Sept. 2004	Real Change 2002 t o 2003	Change 2003 t o 2004
On-system Span Bridges	Structurally Deficient	9,692,496 sq. ft.	8,264,561 sq. ft.	7,428,227 sq. ft.	– 1,427,935 sq. ft.	– 836,334 sq. ft.
	Functionally Obsolete	42,018,837 sq. ft.	44,355,304 sq. ft.	46,988,239 sq. ft.	+ 2,336,467 sq. ft.	+ 2,632,935 sq. ft.
	Sub-standard for Load Only	891,233 sq. ft.	769,887 sq. ft.	671,596 sq. ft.	– 121,346 sq. ft.	– 98,291 sq. ft.
Off-system Span Bridges	Structurally Deficient	3,689,134 sq. ft.	3,671,695 sq. ft.	3,118,843 sq. ft.	– 17,439 sq. ft.	– 552,852 sq. ft.
	Functionally Obsolete	16,906,266 sq. ft.	16,877,501 sq. ft.	18,442,468 sq. ft.	– 28,765 sq. ft.	+ 1,564,967 sq. ft.
	Sub-standard for Load Only	2,260,526 sq. ft.	2,116,714 sq. ft.	1,861,877 sq. ft.	– 143,812 sq. ft.	– 254,837 sq. ft.
All Non-sufficient Bridge Deck Area		**75,458,492 sq. ft.**	**76,055,662 sq. ft.**	**78,511,250 sq. ft.**	**– 597,170 sq. ft.**	**+ 2,455,588 sq. ft.**

[1] A programming update to routines retrieving data from the Bridge Inspection Database, implemented at the end of FY 2002, affected numbers of bridges identified by condition, particularly noticeable as reduction of the number of structurally deficient and functionally obsolete bridges.

In FY 2004, the area of structurally deficient on-system span-type bridge decks decreased by 836,334 sq. ft., and the area of structurally deficient off-system span-type bridge decks decreased by 552,852 sq. ft. The area of functionally obsolete on-system span-type bridge decks increased by 2,632,935 sq. ft., and the area of functionally obsolete off-system span-type bridge decks increased by 1,564,967 sq. ft.. The area of sub-standard-for-load-only on-system span-type bridge decks decreased by 98,291 sq. ft., and the area of sub-standard-for-load-only off-system span-type bridge decks decreased by 254,837 sq. ft.

Chapter 5 – Funding

Terms. This report uses the following terms to describe eligibility for funding of bridge projects under the Federal Highway Administration (FHWA) Highway Bridge Replacement and Rehabilitation Program (HBRRP):

- *HBRRP, Category 6-on-system bridge projects:* This is a classification of replacement or rehabilitation work on structurally deficient or functionally obsolete *on*-system bridges that have a sufficiency rating of 80 or less and are, therefore, eligible for specific funding support under the HBRRP.
- *HBRRP, Category 6-off-system bridge projects:* This is a classification of replacement or rehabilitation work on structurally deficient or functionally obsolete *off*-system bridges that have a sufficiency rating of 80 or less and are, therefore, eligible for specific funding support under the HBRRP.
- *Programmed project:* A programmed project is a project that has been identified as eligible for funding (for example, under HBRRP), prioritized using specific TxDOT and federal criteria, and listed in the current Unified Transportation Program (UTP) as being authorized for letting to contract construction. Programmed projects are scheduled for letting of construction bids for a specific fiscal year.
- *Sufficiency rating:* This is a numerical evaluation of a bridge's structural adequacy and safety, serviceability and functional obsolescence, and essentiality for traffic service. The higher the number the more sufficient the bridge. The rating is used to determine whether a bridge project is eligible for HBRRP rehabilitation or replacement. A sufficiency rating of 80 or less is required to qualify for rehabilitation, and a sufficiency rating of less than 50 is required to qualify for replacement. A structurally deficient bridge with a sufficiency rating between 50 and 80 may qualify for rehabilitation or replacement if justified by engineering or economic analysis.
- *TEBSS:* The Texas Eligible Bridge Selection System provides a formula using scores for bridge attributes to help prioritize bridge replacement and rehabilitation projects to ensure that the most needy bridges are addressed first throughout the state. A TEBSS score is a rating of 0 through 100, with the higher the number the higher the priority.

The HBRRP is administered by the Bridge Division.

HBRRP Funding. A limited amount of HBRRP funds is apportioned to the states from FHWA for the specific purpose of replacing or rehabilitating structurally deficient or functionally obsolete bridges on public highways, roads, and streets. The program applies to deficient existing structures of bridge definition and classification that carry highway vehicular traffic. HBRRP funds can be used on both on-system and off-system bridges.

TxDOT administers the HBRRP program in Texas as follows:

1. TxDOT selects bridge projects for funding according to FHWA eligibility criteria and orders them using its 6-step prioritization system and TEBSS.
2. TxDOT authorizes the projects using its Unified Transportation Program (UTP), a ten-year plan for transportation project development.

The following tables show HBRRP projects that were programmed for FY 2004–2014 but not let at the end of FY 2004. (Note that bridge projects may include more than one bridge.)

Table 5-1. HBRRP Projects with Funding Allocated as of September 2004

Program Period	On-system Projects	Off-system Projects	Total
2004-2014	1,001	1,551	2,552

Table 5-2. HBRRP Funds Allocated for Projects as of September 2004

Program Period	On-system Programmed Amount	Off-system Programmed Amount	Total
2004-2014	$1,810.51 M	$602.57 M	$2,413.08 M

On-system Bridge Projects Authorized to Be Let for Construction Bids. TxDOT authorized the following classes of on-system bridge projects to be let in FY 2004:

- HBRRP-funded projects (Category 6-on-system)
- Replacement and rehabilitation projects not funded under HBRRP (that is, these bridges are not necessarily structurally deficient or functionally obsolete, and the projects are funded under other funding categories)
- New-location bridge projects

The following table shows HBRRP on-system bridge projects authorized to be let in Texas districts in FY 2004. Overall as well as in most districts, fewer on-system bridge projects were authorized to be let in 2004 than in 2003.

Table 5-3. On-System HBRRP Projects Authorized to Be Let, by District

District	2003	2004	District	2003	2004
Abilene	5	3	Laredo	1	0
Amarillo	0	4	Lubbock	0	0
Atlanta	7	8	Lufkin	24	16
Austin	14	10	Odessa	0	0
Beaumont	11	1	Paris	3	3
Brownwood	0	0	Pharr	12	1
Bryan	4	2	San Angelo	0	1
Childress	0	1	San Antonio	7	2
Corpus Christi	0	1	Tyler	3	4
Dallas	33	11	Waco	1	1
El Paso	2	0	Wichita Falls	0	2
Fort Worth	11	9	Yoakum	1	4
Houston	6	9	**Total**	**145**	**93**

Off-System Bridge Projects Authorized to Be Let for Construction Bids. The following classes of off-system bridge projects were funded in FY 2004:

- HBRRP-funded project (Category 6-off-system)
- Replacement and rehabilitation projects not funded under HBRRP (that is, these bridges are not necessarily structurally deficient or functionally obsolete)
- New-location bridge projects

The following table shows HBRRP off-system bridge projects authorized to be let in Texas districts in FY 2004. Overall and in most districts, fewer off-system bridge projects were programmed in 2004 than in 2003.

Table 5-4. Off-System HBRRP Projects Authorized to Be Let, by District

District	2003	2004	District	2003	2004
Abilene	12	16	Laredo	2	0
Amarillo	2	0	Lubbock	0	0
Atlanta	14	9	Lufkin	13	6
Austin	11	20	Odessa	0	0
Beaumont	11	4	Paris	1	7
Brownwood	7	3	Pharr	6	10
Bryan	6	2	San Angelo	1	0
Childress	11	5	San Antonio	13	3
Corpus Christi	22	8	Tyler	4	1
Dallas	65	5	Waco	15	0
El Paso	1	0	Wichita Falls	6	12
Fort Worth	7	29	Yoakum	14	8
Houston	15	5	**Total**	**259**	**153**

PWP/EMP Option. In 2000, TxDOT initiated its Participation-Waived Project/Equivalent-Match Project (PWP/EMP) program to allow a local government to waive its 10% cost participation requirement in an HBRRP off-system bridge project if it agrees to use an equivalent dollar amount to improve other deficient structures in its jurisdiction.[10] In addition to HBRRP-programmed bridges, EMP work may be performed on bridge structures that are not part of the National Bridge Inventory.

The PWP/EMP program is administered by the Bridge Division.

Other Funding Resources for Off-system Bridge Work. Texas provides additional resources for local governments to facilitate improvement of off-system bridges, and those resources include the following:

- The State Infrastructure Bank (SIB) is a revolving account in the State Highway Fund from which TxDOT may award loans to local governments to fund eligible transportation projects. More information on the SIB is available at http://www.dot.state.tx.us/revexp/sib/sibtoc.htm.
- TxDOT's Economically Disadvantaged Counties (EDC) Program allows TxDOT to adjust a county's matching funds requirements after evaluating the local government's ability to meet the requirement. TxDOT also allows a county participating in the EDC program to use its adjusted participation amount in lieu of all or part of its cost participation in the PWP/EMP program. More information on this program is available in TxDOT's *Bridge Project Development Manual* at http://txdot-manuals/dynaweb/colbridg/bpd/ and in TxDOT's *Transportation Planning Manual* at http://manuals.dot.state.tx.us/dynaweb/coltrsys/pln.
- Counties are beginning to explore bridge funding through Regional Mobility Authorities (RMAs) for toll facilities. More information on RMAs is available on the TxDOT internet site at http://www.dot.state.tx.us/dtf/DraftingtheFuture.pdf.

[10] A November 2001 amendment extended the safety-improvement types of work that can be classified as EMP projects and allowed local governments to perform EMP work in geographically adjacent governmental units.

Chapter 6 – Letting for Construction Bids

Terms. This report uses the following terms to describe letting of bridge projects:

- *Let project:* A let project is one that has been programmed and one for which TxDOT has solicited sealed bids from contractors for work on a highway project and has awarded a contract.
- *National Bridge Inventory (NBI):* The NBI is a database of information supplied by the states and maintained by the FHWA about bridges located on public roads.
- *New-location bridges:* These are bridges built in a location where a bridge did not previously exist.

On-system Bridge Projects Let for Construction Bids in FY 2004. The following table shows on-system bridges in HBRRP projects let in Texas districts in FY 2004. Overall, fewer on-system bridge projects were let in 2004 than in 2003.

Table 6-1. On-system Bridges in HBRRP Projects Let, by District

District	Bridges		District	Bridges	
	2003	2004		2003	2004
Abilene	2	1	Laredo	0	0
Amarillo	2	4	Lubbock	0	0
Atlanta	2	5	Lufkin	10	10
Austin	0	9	Odessa	1	0
Beaumont	1	0	Paris	9	3
Brownwood	0	0	Pharr	10	1
Bryan	1	3	San Angelo	0	1
Childress	2	0	San Antonio	2	0
Corpus Christi	2	1	Tyler	3	4
Dallas	19	6	Waco	7	3
El Paso	0	0	Wichita Falls	2	2
Fort Worth	5	7	Yoakum	3	4
Houston	3	5	**Total**	**86**	**69**

The following table shows on-system bridges in non-HBRRP bridge projects let in Texas districts in FY 2003 and FY 2004.

Table 6-2. On-system Bridges in Non-HBRRP Projects Let by District

District	2003		2004	
	New-location Bridges	Repl./Rehab.	New-location Bridges	Repl./Rehab.
Abilene	2	7	12	3
Amarillo	0	0	2	2
Atlanta	0	0	2	1
Austin	77	0	32	4
Beaumont	17	17	6	7
Brownwood	0	4	0	1
Bryan	7	3	10	4
Childress	0	2	11	1
Corpus Christi	12	7	6	7
Dallas	55	36	49	18
El Paso	9	12	9	15
Fort Worth	13	7	17	12
Houston	47	38	52	47
Laredo	8	4	0	6
Lubbock	6	9	1	5
Lufkin	0	0	3	1
Odessa	0	0	0	0
Paris	2	0	3	0
Pharr	8	46	6	36
San Angelo	5	1	2	0
San Antonio	2	15	16	22
Tyler	15	2	1	2
Waco	12	23	7	7
Wichita Falls	0	4	3	2
Yoakum	3	9	2	20
Total	**300**	**246**	**252**	**223**

The following table shows the condition of on-system bridges that had replacement or rehabilitation projects let for construction bids in FY 2004.

Table 6-3. On-system Bridges in Replacement and Rehabilitation Projects Let in FY 2004

Condition	HBRRP Funded	Non-HBRRP Funded	Total No. of Repl./Rehab. Bridges	Percent of Repl./Rehab. Bridges
Structurally Deficient	43	4	47	16%
Functionally Obsolete	23	18	41	14%
Not Structurally Deficient or Functionally Obsolete	1*	201	202	70%
Total	**67**	**223**	**290**	**100%**
* Preventive maintenance/special-eligible work approved by FHWA.				

The following table shows funding levels and the number of on-system bridges in projects let in FY 2004.

Table 6-4. All On-system Bridges in Bridge Projects Let in FY 2004

	HBRRP-funded		Non-HBRRP Repl./Rehab.		Non-HBRRP New-location		Total
		% of Total		% of Total		% of Total	
Funding for Bridge Projects Let	$87.1 M	10%	$362.5 M	41%	$432.0 M	49%	$881.6 M
Number of Bridges in Projects Let	69	13%	223	41%	252	46%	544
Number of Bridge Projects Let	63	25%	98	40%	87	35%	248

For on-system bridge construction in FY 2004—which included rehabilitation, replacement, and new-location bridges, 46% of the bridges addressed (down from 47% in FY 2003) were new-location bridges. Of the money spent on bridge construction in FY 2004, 49% (down from 53% in FY 2003) was used for new-location bridges.

Off-system Bridge Projects Let for Construction Bids in FY 2004. The following table shows off-system bridges in projects let in Texas districts in FY 2003 and FY 2004. Overall, more off-system bridge projects were let in 2004 than in 2003.

Table 6-5. Off-system Bridges in HBRRP Projects Let, by District

District	Bridges		District	Bridges	
	2003	2004		2003	2004
Abilene	2	14	Laredo	1	0
Amarillo	0	1	Lubbock	0	0
Atlanta	5	9	Lufkin	6	5
Austin	4	16	Odessa	0	0
Beaumont	2	5	Paris	20	24
Brownwood	5	3	Pharr	4	9
Bryan	17	2	San Angelo	1	0
Childress	3	5	San Antonio	0	1
Corpus Christi	9	8	Tyler	7	1
Dallas	6	5	Waco	10	0
El Paso	1	0	Wichita Falls	0	12
Fort Worth	13	23	Yoakum	15	8
Houston	3	2	**Total**	**134**	**153**

The following table shows off-system bridges in non-HBRRP bridge projects let in Texas districts in FY 2003 and FY 2004. Except for the HBRRP, TxDOT has limited authority to fund locally owned bridge projects. However, some projects may be selected for construction off the state highway system on roadways with a functional classification greater than a local road or rural minor collector, and these projects are funded under Category 11, District Discretionary.

Table 6-6. Off-system Bridges in Non-HBRRP Projects Let, by District

District	2003		2004	
	New-location Bridges	Repl./Rehab.	New-location Bridges	Repl./Rehab.
Abilene	0	0	0	0
Amarillo	0	0	0	0
Atlanta	0	0	0	0
Austin	0	1	0	1
Beaumont	0	0	0	0
Brownwood	0	0	0	0
Bryan	0	0	0	0
Childress	0	0	0	0
Corpus Christi	1	0	0	0
Dallas	0	10	0	3
El Paso	1	0	0	0
Fort Worth	1	0	0	0
Houston	2	1	2	0
Laredo	0	0	0	0
Lubbock	0	0	1	0
Lufkin	0	0	0	0
Odessa	0	0	0	0
Paris	0	0	0	4
Pharr	0	1	0	0
San Angelo	0	0	0	0
San Antonio	0	1	5	2
Tyler	0	0	0	0
Waco	0	0	0	0
Wichita Falls	0	0	0	0
Yoakum	0	0	0	0
Total	**5**	**14**	**8**	**10**

The following table shows the condition of off-system bridges that had replacement or rehabilitation projects let for construction bids in FY 2004.

Table 6-7. Off-system Bridges in Replacement and Rehabilitation Projects Let in FY 2004

Condition	HBRRP Funded	Non-HBRRP Funded	Total No. of Repl./Rehab. Bridges	Percent of Repl./Rehab. Bridges
Structurally Deficient	132	0	132	82%
Functionally Obsolete	20	0	20	12%
Not Structurally Deficient or Functionally Obsolete	0	10	10	6%
Total	**152**	**10**	**162**	**100%**

The following table shows funding levels and the number of all bridges in projects let in FY 2004.

Table 6-8. All Off-system Bridges in Projects Let in FY 2004

	HBRRP-funded		Non-HBRRP Repl./Rehab.		Non-HBRRP New-location		Total
		% of Total		% of Total		% of Total	
Funding for Bridge Projects Let	$45.6 M	73%	$9.7 M	15%	$7.3 M	12%	$62.6 M
Number of Bridges in Projects Let	153	89%	10	6%	8	5%	171
Number of Bridge Projects Let	151	92%	6	4%	6	4%	163

On-system Bridge Maintenance Projects Awarded in FY 2004. In FY 2004, maintenance (including preventive maintenance) funds for on-system bridges came from two sources:

- TxDOT Maintenance Division's Statewide Maintenance Expenditures—In FY 2004, 2.3% of the $820.7 M maintenance expenditures—the same percentage as in FY 2002 and FY 2003—funded bridge maintenance.
- Construction Letting Volume—In FY 2004, 1.4% of the $4.15 B construction letting—slightly less than in FY 2003—funded bridge maintenance, including HBRRP preventive maintenance projects.

Summary of FY 2004 Funds Spent on On-system Bridges. The following figure shows the distribution of money spent in FY 2004 for on-system bridge maintenance, bridge replacement and rehabilitation, and construction of new-location bridges.

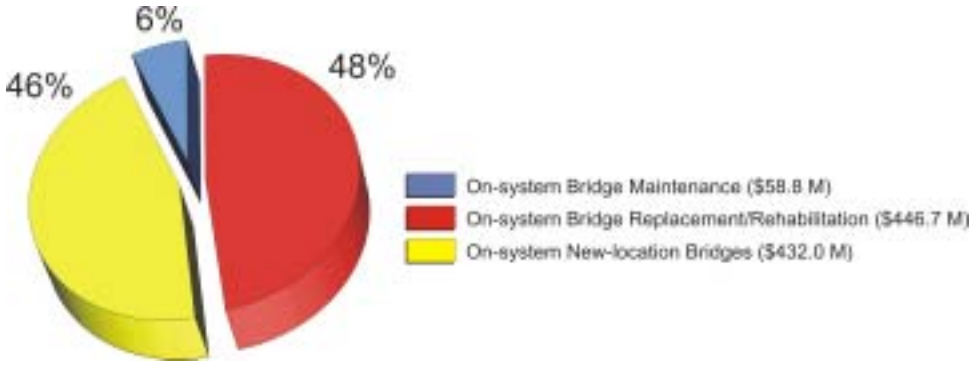


Figure 6-1. Distribution of Funds Spent on On-system Bridges in FY 2004 ($937.5 M Total)

FY 2004 PWP/EMP Option. TxDOT's Participation-Waived Project/Equivalent-Match Project (PWP/EMP) program was initiated by TxDOT in FY 2001. The program allows a local government to waive its 10% cost participation requirement in an off-system bridge project if it agrees to use an equivalent dollar amount to improve other deficient structures in its jurisdiction or the jurisdiction of a geographically adjacent or overlapping governmental unit. The project on which the local participation requirement is waived is referred to as the participation-waived

project (PWP), and the project(s) to be performed by the local government in return for the participation waiver is referred to as the equivalent-match project(s) (EMP).

The following table shows PWP/EMP activity in FY 2004 by TxDOT district.

Table 6-9. PWP/EMP Projects in FY 2004 by District

Districts	Number of PWP Agreements Executed	Number of EMP Projects	Number of NBI EMP Projects	Dollars Waived for PWP Projects	Number of PWP Projects Let
Abilene	1	1	0	$7,620	0
Amarillo	0	0	0	$0	0
Atlanta	3	6	0	$141,437	0
Austin	4	8	1	$155,549	0
Beaumont	4	19	1	$79,286	0
Brownwood	3	15	0	$57,200	0
Bryan	10	37	9	$331,558	0
Childress	1	1	0	$17,136	0
Corpus Christi	6	13	1	$178,778	0
Dallas	16	6	4	$646,702	0
El Paso	0	0	0	$0	0
Fort Worth	19	21	19	$764,562	0
Houston	11	2	2	$452,723	0
Laredo	0	0	0	$0	0
Lubbock	0	0	0	$0	0
Lufkin	4	5	1	$89,230	0
Odessa	0	0	0	$0	0
Paris	65	70	12	$676,178	0
Pharr	0	0	0	$0	0
San Angelo	0	0	0	$0	0
San Antonio	1	1	0	$110,484	0
Tyler	0	0	0	$0	0
Waco	6	6	5	$311,559	0
Wichita Falls	13	25	5	$248,202	0
Yoakum	10	8	7	$275,000	0
Total	**177**	**244**	**67**	**$4,543,204**	**0**

See Appendix B for the FY 2004 PWP/EMP Annual Report, which includes outcomes of the program since it was initiated in 2001.

Chapter 7 – Bridge Needs

Goals. In August 2001, TxDOT adopted a goal that within ten years at least 80% of the bridges in Texas would be in good or better condition. Additionally, TxDOT has adopted a goal to accelerate the upgrade of all structurally deficient on-system bridges, giving highest priority to critically deficient bridges, to eliminate all structurally deficient on-system bridges.

To achieve these goals, TxDOT must improve all existing structurally deficient on-system bridges, improve the other bridges that are currently non-sufficient, and plan improvement of bridges that will become non-sufficient within this goal period.

This report classifies Texas bridges as sufficient (meeting minimum requirements) and non-sufficient, with non-sufficient bridges further classified as structurally deficient, functionally obsolete, or sub-standard for load only:

- Classifications of structurally deficient and functionally obsolete are based on National Bridge Inspection Standards (NBIS) criteria.
- States vary in the loads they allow on bridges, and bridges that fail to meet Texas load limits and are not structurally deficient or functionally obsolete are classified as sub-standard for load only. A sub-standard-for-load-only structure is load-posted or recommended for load-posting.
- Bridges not structurally deficient, functionally obsolete, or sub-standard for load only are classified as sufficient.

Condition of Existing Bridges. Of Texas' 48,920 bridges, 37,074—75.8%, up from 75.1% in FY 2003—were sufficient in September 2004, as detailed in the following table:

Table 7-1. Sufficient Bridges

Bridge Type	Number of Sufficient Bridges		% of Total Number of Type of Bridge	
	2003	2004	2003	2004
On-system Span-type Bridges	15,207	15,188	79.6%	79.3%
On-system Bridge-class Culverts	12,458	12,472	95.0%	95.0%
Off-system Span-type Bridges	5,091	5,543	42.6%	45.9%
Off-system Bridge-class Culverts	3,653	3,871	85.0%	84.9%

Of all on-system bridges in September 2004, 85.7% were sufficient, down from 85.9% in September 2003, and 56.6% of all off-system bridges were sufficient, up from 53.8% in September 2003, as shown in the following figure.

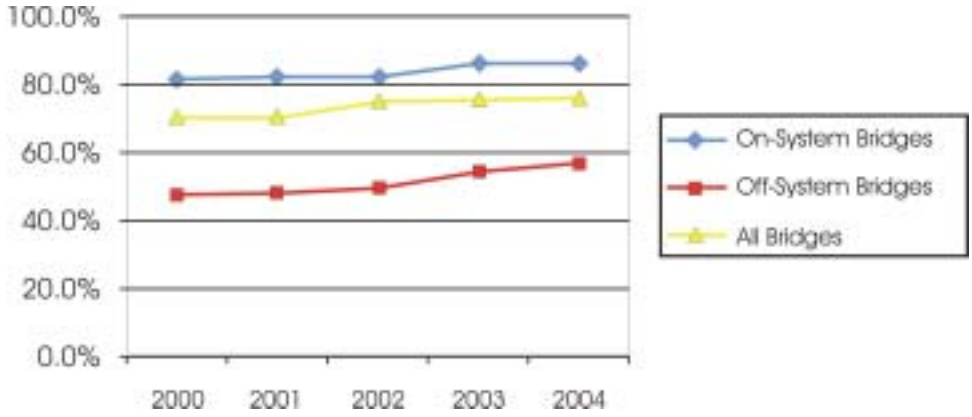


Figure 7-1. Change in Percent of Sufficient Bridges from September 2000 through September 2004

For Texas' 31,225 span-type bridges, evaluation of condition based on count varies somewhat from evaluation of condition based on deck area, as shown in the following table.

Table 7-2. Condition of Span-type Bridges

Condition		% Based on Count		% Based on Deck Area	
		2003	**2004**	**2003**	**2004**
Sufficient		65.4%	66.4%	78.7%	78.4%
Non-sufficient	Structurally Deficient	8.2%	7.3%	3.4%	2.9%
	Functionally Obsolete	20.7%	21.0%	17.2%	18.0%
	Sub-standard for Load Only	5.6%	5.1%	0.8%	0.7%

The total number of Texas bridges increased by 241 during FY 2003 and by another 463 in FY 2004, as shown in Table 2-1. As shown in Tables 3-5 and 3-6, the total number of sufficient bridges increased by 384 during FY 2003 and by 665 during FY 2004. The number of sufficient on-system span-type bridges actually decreased by 19 in FY 2004; however, the deck area of sufficient on-system span-type bridges increased by 1,508,575 sq. ft. as shown in Table 4-14. Additionally, the overall increase in sufficient bridges is partly the result of 300 new-location on-system bridges built in FY 2003 and 252 new-location on-system bridges built in FY 2004.

According to the September 2004 *Transportation Statistics Annual Report* (published by the US Department of Transportation's Bureau of Transportation Statistics and based on 2002 data), 14% of all roadway bridges nation-wide are structurally deficient, and 14% are functionally obsolete. In Texas as of September 2004, 5% of all bridges are structurally deficient and 16% are functionally obsolete. The following table summarizes change in the condition of non-sufficient bridges during FY 2004, detailed in Tables 3-7 and 3-8.

Table 7-3. Overall Change in Condition of Non-sufficient Bridges by Count

Condition	September 2003	September 2004	Change during FY 2003	Change during FY 2004
Structurally Deficient	2,678	2,416	– 127	– 262
Functionally Obsolete	7,477	7,696	+ 70	+ 219
Sub-standard for Load Only	1,835	1,659	– 70	– 176

Two programs particularly helped improve Texas bridges in FY 2004:

- Highway Bridge Replacement and Rehabilitation Program (HBRRP)—TxDOT administers this Federal Highway Administration (FHWA) program, using its Texas Eligible Bridge Selection System (TEBSS) to select and prioritize bridge projects for program funding. TEBSS ensures that bridges in the worst condition have the highest priority for HBRRP funding. As shown in Tables 6-3 and 6-7, in FY 2004 federally funded HBRRP projects let to construction 175 structurally deficient bridges (43 on-system and 132 off-system) and 43 functionally obsolete bridges (23 on-system and 20 off-system), for a total of 218 bridges. In FY 2004 federally funded HBRRP projects let to construction 7 more structurally deficient bridges and 12 fewer functionally obsolete bridges, a total of 5 fewer bridges, than in FY 2003.
- TxDOT's Participation-Waived Project/Equivalent-Match-Project (PWP/EMP) option allows a local government to waive its required 10% cost participation in an off-system bridge project if it agrees to use an equivalent dollar amount to improve other deficient structures in its jurisdiction or the jurisdiction of a geographically adjacent or overlapping governmental unit. As shown in Table 6-9, the PWP/EMP program supported work on no participation-waived structurally deficient or functionally obsolete off-system bridge projects that went to letting in FY 2004. Additional agreements with local governments that were not let for construction bids in FY 2004 were executed during the year to address another 177 participation-waived structurally deficient or functionally obsolete off-system bridge projects in the future. In addition, a total of 55 equivalent-match projects involving bridges that are on the National Bridge Inventory will be improved by local governments.

In September 2000, 33,406 of Texas' 47,788 bridges—69.9%—were sufficient. As of September 2001, the starting point for the ten-year goal, 33,807 of Texas' 48,084 bridges—70.3%—were sufficient. In September 2002, 34,174 of Texas' 48,216 bridges—70.9%, 0.6% more than in September 2001—were sufficient. In September 2003, 36,409 of Texas' 48,457 bridges—75.1%, 4.2% more than in September 2002—were sufficient. In September 2004, 37,074 of Texas' 48,920 bridges—75.8%, 0.7% more than in September 2003—were sufficient. Among on-system bridges 85.7%were sufficient, 0.2% less than the 85.9% of the previous year. And among off-system bridges, 56.6% were sufficient, 2.8% more than the 53.8% of the previous year.

As shown in Tables 6-3 and 6-7, during FY 2004 in all funding categories TxDOT let to construction work to upgrade to sufficient 47 on-system structurally deficient bridges, same as the previous year, and 132 off-system structurally deficient bridges, up 10 from the previous year. TxDOT also let to construction work to upgrade to sufficient 41 on-system functionally

obsolete bridges, down 21 from the previous year, and 20 off-system functionally obsolete bridges, up 4 from the previous year.

As shown in Table 3-8, during FY 2004 the number of on-system structurally deficient span-type bridges decreased by 78, and the number of off-system structurally deficient span-type bridges decreased by 176. The number of structurally deficient on-system culverts decreased by 2, and the number of structurally deficient off-system culverts decreased by 6. As shown in Figures 4-3 and 4-5, in September 2004 most of the structurally deficient span-type bridges were off-system: 495 on-system and 1,788 off-system. However, as shown in Figures 4-4 and 4-6, most of the structurally deficient deck area was on-system: 7.4 M sq. ft. on-system and 3.1 M sq. ft. off-system.

As shown in Table 3-8, during FY 2004 the number of on-system functionally obsolete span-type bridges increased by 165. The number of off-system functionally obsolete span-type bridges decreased by 17; however, functionally obsolete span-type bridge deck area actually increased by 1,564,967 sq. ft. as shown in Table 4-16. The number of functionally obsolete on-system culverts increased by 22, and the number of functionally obsolete off-system culverts increased by 49. As shown in Figures 4-3 and 4-5, in September 2004 the numbers of on- and off-system functionally obsolete span-type bridges were about the same, with 3,302 on-system and 3,260 off-system. As shown in Figures 4-4 and 4-6, most of the functionally obsolete deck area was on-system: 47 M sq. ft. on-system and 18.4 M sq. ft. off-system.

As shown in Table 3-8, during FY 2004 the number of on-system sub-standard-for-load-only span-type bridges decreased by 26, and the number of off-system sub-standard-for-load-only span-type bridges decreased by 151. The number of sub-standard-for-load-only on-system culverts decreased by 7, but the number of sub-standard-for-load-only off-system culverts increased by 8. As shown in Figures 4-3 and 4-5, in September 2004 most of the sub-standard-for-load-only span-type bridges were off-system: 148 on-system and 1,429 off-system. As shown in Figures 4-4 and 4-6, most of the sub-standard-for-load-only deck area was also off-system: 0.7 M sq. ft. on-system and 1.9 M sq. ft. off-system.

Challenges for Achieving the 80%-Sufficient-by-2011 Goal. Structurally deficient bridges present potential strength issues, functionally obsolete bridges present potential for traffic flow problems and accidents, and sub-standard-for-load-only bridges pose issues for traffic flow. Texas has an aging transportation infrastructure that includes bridges that were not designed for today's loads and volume of traffic. Traffic volumes are increasing, and trucks are heavier today than many bridges were designed to support. This report tracks annual progress toward the ten-year goal to make at least 80% of Texas bridges good or better by September 2011.

Table 7-4. Bridges that Must Be Improved to Reach the 80%-Sufficient-by-2011 Goal

	2000	2001	2002 (after adjustment*)	2003	2004
Total Bridges	47,788	48,084	48,216	48,457	48,920
Total Sufficient Bridges	33,406	33,809	36,025	36,409	37,074
Percent Sufficient Bridges	69.9%	70.3%	74.7%	75.1%	75.8%
Total Non-sufficient Bridges**	14,255	14,192	12,117	11,990	11,771
Percent Non-sufficient Bridges	29.8%	29.5%	25.1%	24.7%	24.1%
Net Number of Bridges Improved (not New-location Bridges) during Year	NA	107	2,084	143	202
No. of Bridges/Year to be Improved to Reach 80%-Sufficient-by-2011 Goal	439	466	283	295	295

* A programming change implemented at the end of FY 2002 to routines retrieving data from the Bridge Inspection Database affected numbers of bridges identified by condition. See *Report on Texas Bridges as of 2003* for more information.
****** A few bridges are not classified by condition. Bridge records included 83 bridges not classified by condition in September 2001, 68 bridges not classified by condition in September 2002, 58 bridges not classified by condition in September 2003, and 75 bridges not classified by condition in September 2004.

In September 2000, Texas had 47,788 bridges, and 33,406 (69.9%) of them were sufficient. If the bridge inventory had remained stable—and it actually increased by 296 bridges in FY 2001—TxDOT would have had to decrease its inventory of non-sufficient bridges by 4,825—approximately 439 bridges per year—to reach Commissioner Johnson's goal of at least 80% sufficient bridges by 2011[11]. Although TxDOT increased the total number of sufficient bridges by 403 between September 2000 and September 2001, 296 of those bridges were new-location bridges. In other words, in FY 2001, the year preceding TxDOT's initiative to reach a goal of at least 80% sufficient bridges within ten years, the number of non-sufficient bridges actually decreased by only 107 rather than the decrease of 439 required to meet the goal.

In September 2001, Texas had 48,084 bridges, and 33,809 (70.3%) of them were sufficient. If the bridge inventory had remained the same for the next ten years—and it actually increased by 132 bridges in FY 2002—TxDOT would have had to decrease its inventory of non-sufficient bridges by 4,659—approximately 466 bridges per year—to reach the ten-year goal of 80% sufficient bridges. During FY 2002, the number of non-sufficient bridges actually decreased by 233 rather than the decrease of 466 required to meet the goal.

In September 2002, Texas had 48,216 bridges and 34,174 (70.9%) of them were sufficient. If the bridge inventory had remained stable—and it actually increased by 132 bridges—TxDOT would have had to decrease its inventory of non-sufficient bridges by 4,399—approximately 489 bridges per year—to reach its goal of at least 80% sufficient bridges within the next nine years. During FY 2003, the number of non-sufficient bridges actually decreased by 143 rather than the decrease of 489 required to meet the goal.

[11] Texas Transportation Commission's Transportation Working Group, "Texas Transportation Partnerships: Connecting You to the World," August 2001.

In September 2003, Texas had 48,457 bridges: 36,409 (75.1%) of them were sufficient. If the bridge inventory had remained stable—and it actually increased by 463—TxDOT would have had to decrease its inventory on non-sufficient bridges by 2,357—approximately 295 bridges per year—to reach its goal of at least 80% sufficient bridges within the next eight years. During FY 2003, the number of non-sufficient bridges actually decreased by 202 rather than the decrease of 295 needed to meet the goal.

As shown in Table 7-4, in September 2004, Texas had 48,920 bridges: 37,074 (75.8%) of them were sufficient and 11,771 of them were non-sufficient, with the remainder not classified by condition. If the bridge inventory remains stable, TxDOT will need to decrease its inventory of non-sufficient bridges by 2,062—approximately 295 bridges per year—to reach its goal of at least 80% sufficient bridges within the next seven years. Work is ongoing in FY 2005 to achieve the goal.

Challenges for Eliminating All Structurally Deficient On-system Bridges. In September 2000, Texas had 758 structurally deficient on-system bridges. During FY 2001 the inventory of structurally deficient on-system bridges actually increased by 5, and in September 2001 Texas had 763 structurally deficient on-system bridges. The inventory of structurally deficient on-system bridges decreased by 48 during FY 2002, and in September 2002 Texas had 693 structurally deficient on-system bridges. During FY 2003, the inventory of structurally deficient on-system bridges decreased by 43, and in September 2003 Texas had 645 structurally deficient on-system bridges. As shown in Table 3-8, the inventory of structurally deficient on-system bridges decreased by 80 during FY 2004, and in September 2004 Texas had 565 structurally deficient on-system bridges.

Non-sufficient Bridges in FY 2004. Analysis of the condition of Texas bridges during FY 2004 clarifies the challenges for achieving TxDOT's bridge goals.

Structurally Deficient Bridges. During FY 2004, TxDOT let to contract work on 47 on-system structurally deficient bridges[12], as shown in Table 6-3; during that time the total number of all on-system structurally deficient bridges decreased by 80, as shown in Table 3-8. During FY 2004, TxDOT let to contract work on 132 off-system structurally deficient bridges, as shown in Table 6-7, and during that time the total number of all off-system structurally deficient bridges decreased by 182, as shown in Table 3-8.

In FY 2004 the number of structurally deficient on-system span-type bridges decreased by 78, as shown in Table 3-8. The number of structurally deficient on-system bridge-class culverts increased by 2.

In FY 2004 the number of structurally deficient off-system span-type bridges decreased by 176, and the number of structurally deficient off-system bridge-class culverts decreased by 6, as shown in Table 3-8. However, 14.8% of all off-system span type bridges were still structurally deficient in September 2004, as shown in Table 4-3, down from 16.4% in September 2003.

[12] Many bridges let to contract in FY 2003 were under construction in September 2004, and their improved sufficiency will not be reflected in the Bridge Inspection database until after construction on them is complete.

Functionally Obsolete Bridges. During FY 2004, TxDOT let to contract work on 41 on-system functionally obsolete bridges[13], as shown in Table 6-3. However, during that time the total number of all on-system functionally obsolete bridges increased by 187, as shown in Table 3-8. During FY 2004, TxDOT let to contract 20 off-system functionally obsolete bridges, as shown in Table 6-7. However, during that time the total number of all off-system functionally obsolete bridges increased by 32, as shown in Table 3-8.

In September 2004, 12% of all on-system bridges and 23% of all off-system bridges were functionally obsolete, as shown in Figures 3-3 and 3-4. These proportions are higher for span-type bridges: 17% of all on-system span-type bridges and 27% of all off-system span-type bridges were functionally obsolete in September 2004, as shown in Figures 4-3 and 4-5. These proportions have not changed significantly since September 2000, and although they are dropping slightly, the total number of functionally obsolete bridges has increased by 636 (161 in FY 2001, 186 in FY 2002, 70 in FY 2003, and 219 in FY 2004) and the total number of functionally obsolete span-type bridges has increased by 563 (121 in FY 2001, 173 in FY 2002, 121 in FY 2003, and 148 in FY 2004), as shown in Tables 3-7 and 3-8.

Sub-standard-for-Load-Only Bridges. As shown in Table 3-8, in September 2004 Texas had 1,659 sub-standard-for-load-only bridges[14], and 86% of them were off-system span-type bridges. The number of sub-standard-for-load-only off-system span-type bridges decreased in FY 2004 from 1,580 to 1,429, but at the end of the year 12% of all off-system span-type bridges were still sub-standard for load only, as shown in Figure 4-5.

Resources Needed. TxDOT is using a number of funding categories in addition to the HBRRP and PWP/EMP programs to facilitate improvement of these bridges, and TxDOT and local governments must work more effectively to improve these bridges in the coming years. TxDOT's Economically Disadvantaged Counties (EDC) Program and State Infrastructure Bank (SIB) also provide resources for local governments trying to improve their off-system bridges.

Of TxDOT funds spent on bridges in FY 2004, 54% (up from 50% in FY 2003) were distributed for bridge maintenance, rehabilitation, and replacement, with remaining funds going for construction of new-location bridges.

Assessments of condition by count (number of bridges) focus on the number of locations where bridges pose structural issues and potential for traffic disruption. By count, more off-system bridges require attention to address structural deficiencies than do on-system bridges. Assessments of condition by deck area, however, provide a clearer view of funding needed to address structural deficiencies. More than 70% of the structurally deficient deck area for span-type bridges is on-system, as shown by Tables 4-2, 4-4, and 4-6.

[13] Many bridges let to contract in FY 2003 were under construction in September 2003, and their improved sufficiency will not be reflected in the Bridge Inspection database until after construction on them is complete.
[14] Adjustment of the data set in September 2002 decreased the number of structurally deficient and functionally obsolete bridges. Because structurally deficient and functionally obsolete are controlling categories for a bridge that is also substandard-for-load, the substandard-for-load-only category became the controlling category for some bridges previously classified as structurally deficient or functionally obsolete.

Access to information about Texas bridges is essential for effective planning and monitoring. TxDOT is developing an automated system to facilitate the management of on- and off-system bridges. The Bridge Management Information System (BMIS), which will be based on AASHTO's bridge management software, Pontis, will allow TxDOT to store and process bridge inspection data, bridge photographs, bridge reports, and other bridge information in a relational database. Information retrieval will be possible in a variety of textual and graphical formats. The retrieved information will facilitate assessment of implications of project decisions, understanding impact of alternative bridge management strategies, forecasting preventive maintenance, and evaluation of bridge performance over time. Information retrieval will be quick, and retrieved information will be easily shared and available in user-friendly formats. This system is much needed, and it will greatly increase efficiency of bridge administration. This system is especially necessary to allow tracking of the condition of Texas bridges at a level of detail and frequency required to facilitate prioritization of funding to surmount challenges inherent in meeting the goals for improving Texas bridges.

Chapter 8 – Meeting the Challenges

Priorities. To meet its goals to have at least 80% of Texas bridges in good or better condition by August 2011 and to eliminate all structurally deficient on-system bridges, TxDOT is working to improve non-sufficient bridges to sufficient status. TxDOT's primary focus is on accelerating the upgrade of all structurally deficient on-system bridges, giving highest priority to critically deficient bridges[15], in an effort to eliminate all structurally deficient on-system bridges.

In September 2004, Texas had 565 structurally deficient on-system bridges, as shown in Figure 3-3 and Table 3-8, in contrast with 645 in September 2003, 693 in September 2002, and 763 in September 2001. TxDOT reduced the inventory of structurally deficient on-system bridges by 80 during FY 2004, by 43 during FY 2003, and by 70 during FY 2002, in contrast with an increase of 5 during FY 2001.

As of September 2004, Texas has 565 structurally deficient on-system bridges and 1,851 structurally deficient off-system bridges in addition to 9,355 otherwise non-sufficient (functionally obsolete or sub-standard for load only) on- and off-system bridges. With all structurally deficient on-system bridges upgraded before August 2011, Texas will still need to upgrade an average additional 214 structurally deficient off-system and functionally obsolete and sub-standard-for-load-only on- and off-system bridges each year to remain on track to reach a total of at least 80% sufficient bridges by August 2011.

Current Bridge Inventory	48,920
80% of Current Bridge Inventory	39,136
Currently Sufficient Bridges	37,074
All Currently Structurally Deficient On-system Bridges	565
No. of Additional Bridges to Be Improved over 7 Years to Reach 80%-sufficient Goal	1,497
Average Number of Bridges/Year to Be Improved over 7 Years to Reach 80%-sufficient Goal	295

The number and condition of Texas bridges change constantly, affecting estimates for work needed to achieve goals. TxDOT will continue its assessment of work needed in the coming years to meet its goals to have no structurally deficient on-system bridges and to have at least 80% of Texas bridges in good or better condition by August 2011.

For FY 2004, $190.6M FHWA Highway Bridge Replacement and Rehabilitation Program (HBRRP) funding was apportioned for work on structurally deficient and functionally obsolete bridges (sub-standard-for-load-only bridges are not eligible for HBRRP funding). As shown in the following table, as of September 2004, $149.3M of the available funds had been obligated for use on structurally deficient and functionally obsolete bridges.

[15] Critically deficient bridges are the bridges classified as structurally deficient that are in most need of attention.

Table 8-1. HBRRP Funding Available and Used

Year	$ Apportioned for Year*	$ Obligated during Year	% Obligated during Year
FY 2001	$172.8M	$154.7M	89.5%
FY 2002	$189.7M	$160.3M	84.5%
FY 2003	$162.2M	$138.8M	85.6%
FY 2004	$190.6M	$149.3M	78.3%
FY 2005	$153.4M**		

* Funds apportioned each year must be obligated within the following 4 years.
** Temporary allocation pending final reauthorization bill.

Although TxDOT has always obligated all HBRRP funds within the required four years of their apportionment, in the coming years TxDOT will particularly focus on obligating all available HBRRP funds each year.

Strategy. To meet its goals to have no structurally deficient on-system bridges and to have at least 80% of Texas bridges in good or better condition by August 2011, TxDOT is following a plan for improving Texas bridges that is adjusted annually after review of the effect of the preceding year's work on progress toward the goal.

Plan. The basic steps of the plan to achieve the goals are given below:

- Develop and distribute an annual report to identify progress toward achieving the goals.
  Status: This report serves that purpose.
- Use the annual report to adjust the resources each year as needed.
  Status: Data compiled during development of the first issue of this report, *Report on Texas Bridges as of September 2001*, supported development of a new prioritization for on-system HBRRP bridges of bridge work for the 12-month letting schedule:
  Priority 1 – Critically deficient structurally deficient land-locking bridges
  Priority 2 – Remaining critically deficient structurally deficient bridges
  Priority 3 – Structurally deficient land-locking bridges
  Priority 4 – Remaining structurally deficient bridges
  Priority 5 – Functionally obsolete land-locking bridges
  Priority 6 – Remaining functionally obsolete bridges
- Produce completed bridge plans, specifically targeting those structurally deficient on-system bridges that are critically deficient, that will be available to substitute for delayed HBRRP projects.
  Status: TxDOT's Bridge Division and districts continue to target these bridges for plan development.
- Produce completed bridge plans, targeting structurally deficient bridges that will be available to substitute for delayed HBRRP projects.
  Status: TxDOT's Bridge Division, with support from the Bridge Division bridge design consultant pool, continues to work with districts to develop a backlog of projects to substitute for delayed HBRRP projects.
- Develop a process to substitute HBRRP projects for those that are delayed for letting to construction in order to contract 100 percent of HBRRP program funds on the 12-month HBRRP letting schedule each fiscal year.

Status: TxDOT's Bridge Division is working with the districts to schedule HBRRP projects in the first eight months of each fiscal year to allow sufficient time to substitute for projects that are delayed to letting.

- Use other categories of funding in addition to HBRRP funds to achieve the goals.
  Status: TxDOT's Bridge Division and districts continue to emphasize using additional categories of funding for bridge replacement and rehabilitation.
- Standardize additional bridge elements and make them available on the Internet in order to simplify design, speed construction, and lower costs.
  Status: During FY 2004, TxDOT revised culvert and drainage standard drawings, updated standard drawings for prestressed concrete I-beam details, issued new miscellaneous bridge standard drawings, revised standard drawings for rail anchorage details, and issued new steel beam standard drawings.
- Increase the use of cluster contracts that address two or more deficient bridges within a reasonable geographical area. This should lower overall design and construction costs.
  Status: TxDOT's Bridge Division and districts continue to emphasize using cluster contracts.
- Use maintenance funds to address on-system bridge problems that result in low condition ratings to prevent non-structurally deficient on-system bridges from becoming structurally deficient.
  Status: As shown in Figure 6-1, TxDOT distributed $58.8 M for on-system bridge maintenance in FY 2004, compared to $78.8 M in FY 2003, $57.2 M in FY 2002, and $57.6 M in FY 2001.

The following information is included in this annual report to assist in achieving the goals:

- The number of structurally deficient on-system bridges that must be upgraded in the coming years to remain on track for accelerating the elimination of all structurally deficient bridges.

  As of September 2004, there were 565 (in contrast with 645 in September 2003, 693 in September 2002, 763 in September 2001, and 758 in September 2000) structurally deficient on-system bridges, as shown in the following figure.

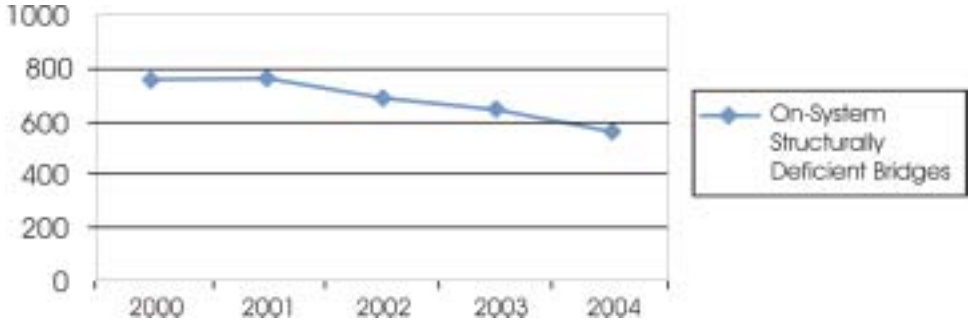


Figure 8-1. Count of Structurally Deficient On-system Bridges from September 2000 through September 2004

- The number of structurally deficient on-system bridges and the number of functionally obsolete and sub-standard-for-load-only bridges that must be upgraded in the coming year to remain on track for reaching a total of at least 80% sufficient bridges by August 2011.

  Assuming that the bridge inventory remains stable, its condition does not further deteriorate, and all of the 565 structurally deficient on-system bridges will be upgraded, as of September 2004 an average additional 214 structurally deficient off-system bridges and functionally obsolete and sub-standard-for-load-only on- and off-system bridges must be upgraded each year to remain on track for reaching a total of at least 80% sufficient bridges by August 2011.

- The amount of HBRRP funding available and the amount of HBRRP funding obligated in the current year for work on structurally deficient and functionally obsolete bridges.

  See Table 8-1.

- Recommendations for additional funding sources as needed to accelerate the elimination of all structurally deficient on-system bridges.

  Because of the limited amount of HBRRP funding, the use of additional funding categories is needed.

Innovations and Best Practices in FY 2004. To facilitate use of available funding to upgrade non-sufficient bridges as efficiently as possible, TxDOT will annually review innovations and best practices of the preceding year.

The following programs made funds available or facilitated their use to upgrade non-sufficient bridges:

- Highway Bridge Replacement and Rehabilitation Program (HBRRP)—TxDOT has administered this Federal Highway Administration (FHWA) program since its beginning in 1970. Initial funding participation requirements for both on- and off-system bridges were 80% federal and 20% state or local; however, in 1995 TxDOT initiated a change in participation requirements for off-system bridges to pay half of the local government's share (80% federal, 10% state, 10% local). For bridge work contracted in FY 2004, this program provided funding for 175 (in contrast with 168 in FY 2003, 170 in FY 2002, and 146 in FY 2001) structurally deficient and 43 (in contrast with 55 in FY 2003, 34 in FY 2002, and 46 in FY 2001) functionally obsolete bridges, for a total of 218 of the 240 deficient or obsolete bridges (90.1%) that were awarded contracts in FY 2004.
- State Infrastructure Bank (SIB)—Effective September 1997, this revolving account in the State Highway Fund allows TxDOT to award loans to local governments to support eligible transportation projects.
- Economically Disadvantaged Counties (EDC) Program—Effective January 1998, this program allows TxDOT to adjust a county's matching funds requirements after evaluating the local government's ability to meet the requirement. TxDOT also allows a county participating in the EDC program to use its adjusted participation amount in lieu of all or part of its 10% cost participation in the PWP/EMP program.

- Participation-Waived Project/Equivalent-Match Project (PWP/EMP) Program—Effective August 2000, revised local participation requirements allow 100% federal/state funding of a TxDOT-programmed "participation-waived project (PWP)" in cases where the local government agrees to perform structural improvement work on other "equivalent-match project (EMP)" deficient bridges with a dollar amount at least equal to their normal 10% project match. State design standards apply to the PWPs while the EMP design standards are determined by the local governments based on local needs and standards.
- Simplified local government participation—Effective August 2000, when the local government elects to participate in the cost of a TxDOT-programmed bridge, instead of being responsible for 10% of actual costs, the local government is now responsible for 10% of the estimated project cost at the time the agreement with TxDOT is signed. The local government no longer participates in subsequent overruns in costs of program-eligible project items unless it lets and manages the project.
- Regional Mobility Authorities (RMAs)—Counties are beginning to explore bridge funding through RMAs for toll facilities.

Appendix A – FY 2004 PWP/EMP Annual Report

Background. On July 27, 2000, an amendment to 43 TAC Section 15.55 relating to changes in the local funding requirements of Category 6 projects received final approval by the Commission, and became effective August 20, 2000. This rule change instituted what has come to be referred to as the department's Participation-Waived Project (PWP) program. An additional amendment to this rule that became effective on November 14, 2001 expanded the types of work that qualified for this program and made the program more flexible.

The usual federal-state-local government cost participation percentages required on off-system bridge projects is 80-10-10. However, the August 2000 amendment to Article 15.55 provided that the 10 percent local government cost participation could be waived if the local government agreed to use an equivalent dollar-amount to improve other deficient structures under its jurisdiction. The project on which the 10-percent local cost participation is waived is referred to as the "participation-waived" project, while the project(s) to be performed by the local government in return for the waiver is referred to as the "equivalent-match" project(s) (EMP). The November 2001 amendment expanded the types of work that qualify for equivalent-match projects to include safety related work and clarified the type of structures on which this work could be performed to include low water crossings. It also allowed local governments to perform EMP work in geographically adjacent governmental units.

The participation-waived projects must be Construct or Develop authorized in the Unified Transportation Program Category 6. For the purposes of this program, eligible structures for address under equivalent-match projects not only include those meeting the Federal Highway Administration (FHWA) bridge definition that are deficient-classified, but also include mainlane cross-drainage structures and low water crossings that do not meet the FHWA bridge definition but are deficient. The equivalent-match bridge or mainlane cross-drainage structure must be classified as deficient, or be weight-restricted for school buses.

This program has expanded the number of local governments participating in our off-system bridge program and has provided many other local governments with the incentive to increase their participation. Through the equivalent-match projects, many structures that had deficiencies but which were not programmed in our off-system bridge program have been scheduled for improvements which will increase their safety and efficiency. Overall, the program should result in accelerating the rate at which structurally deficient and functionally obsolete off-system bridges are improved throughout the state.

The following report presents a summary of the PWP program for FY 2004. These PWP/EMP reports are issued annually and provide information on both the current fiscal year's results and the cumulative results of the program up to the time of this report.

The Bridge Division maintains a complete database containing all participation-waived projects and their associated equivalent-match projects, by district. The database includes dates for the lettings of PWP projects, both the required and actual completion dates for the EMP projects, and an indication of any EMP projects that are overdue. The districts provide information for these dates annually during the month of November.

FY 2004 Summary. For FY 2004, 17 of the 25 districts executed participation-waived off-system bridge project agreements, for a total of 177 participation-waived projects and 244 equivalent-match projects. Cost estimates for the 177 participation-waived projects total $48.00M with total local participation of $4.59M, of which $4.54M has been waived.

Of the 244 equivalent-match projects having a $7.42M total estimated cost, 67 (27%) are on the National Bridge Inventory (NBI) for an estimated cost of $4.41M, and 177 (73%) are local projects not on the NBI for an estimated cost of $3.01M.

Of the 244 equivalent-match projects, 217 (89%) are on school bus routes. Of the 67 equivalent-match projects on the NBI, 55 (82%) are on school bus routes. Of the 177 local projects not on the NBI, 162 (92%) are on school bus routes.

Of the 177 participation-waived projects with agreements executed in FY 2004, 9 (5%) have been let to contract. Of the 244 associated equivalent-match projects, 38 (16%) have been completed.

Update on Activity since Initiation in FY 2001. Since the program was initiated in FY 2001, 21 of the 25 districts have executed participation-waived off-system bridge project agreements, for a total of 764 participation-waived projects and 1,189 equivalent-match projects. Cost estimates for the 764 participation-waived projects total $227.94M with total local participation of $25.47M, of which $20.73M has been waived.

Of the 1,189 equivalent-match projects having a $28.66M total estimated cost, 393 (33%) are on the National Bridge Inventory (NBI) for an estimated cost of $18.31M, and 796 (67%) are local projects not on the NBI for an estimated cost of $10.35M.

Of the 1,189 equivalent-match projects, 970 (82%) are on school bus routes. Of the 393 equivalent-match projects on the NBI, 324 (82%) are on school bus routes. Of the 796 local projects not on the NBI, 646 (81%) are on school bus routes.

Of the 764 participation-waived projects with agreements executed since the initiation of the program in FY 2001, 409 (54%) have been let to contract. Of the 1,189 associated equivalent-match projects, 536 (45%) have been completed.

Of the 1,189 equivalent-match projects associated with agreements executed since the initiation of the program in FY 2001, 34 (3%) have been overdue for completion within the allowable 3 years after the contract award of the associated participation-waived project. Of the 34 overdue equivalent-match projects, 10 were subsequently completed and 24 remain uncompleted.

Attachments. The following attachments are appended to this report:
- Attachment A – FY 2001 Summary of Participation Waived Project Information
- Attachment B – FY 2002 Summary of Participation Waived Project Information
- Attachment C – FY 2003 Summary of Participation Waived Project Information
- Attachment D – FY 2004 Summary of Participation Waived Project Information

- Attachment E – Cumulative Summary of PWP/EMP Projects
- Attachment F – Summary of PWP/EMP Projects
- Attachment G – Summary of PWP/EMP $ Amounts
- Attachment H – Off-System Bridge Inventory 1999-2003

Questions concerning the participation-waived project program may be addressed to Michael S. O'Toole, P.E., Director of Project Development in the Bridge Division, at telephone number (512) 416-2240.

Attachment A
FY 2001 Summary of Participation Waived Project Information

District	No. of PWPs	No. of EMPs	EMPs on NBI	EMP (NBI) on School Bus Rt.	EMP (nonNBI) on School Bus Rt.	Total PWP Project Estimates	Total Local Participation Amounts	$ Amt for EMP (NBI)	$ Amt for EMP (nonNBI)	Total $ Waived for PWPs	PWP Projects Let to Contract	EMP Projects Completed	EMP Projects Overdue
(08) ABL	3	5	5	0	0	$832,221	$80,012	$87,000	$0	$80,012	3	1	2
(04) AMA	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(19) ATL	16	11	0	0	11	$3,884,939	$324,579	$0	$305,077	$265,786	16	5	0
(14) AUS	7	12	8	7	3	$4,826,055	$1,291,019	$937,283	$86,866	$358,098	6	12	1
(20) BMT	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(23) BWD	7	35	0	0	32	$1,621,000	$162,100	$0	$171,603	$162,100	6	31	4
(17) BRY	9	10	9	9	1	$2,225,345	$214,373	$212,888	$6,300	$196,856	8	8	1
(25) CHS	21	53	5	2	9	$3,314,922	$263,432	$36,875	$256,064	$245,919	17	42	0
(16) CRP	5	1	1	1		$1,077,700	$107,770	$117,473	$0	$107,770	2	1	0
(18) DAL	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(24) ELP	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(02) FTW	38	41	39	38	2	$12,681,197	$1,212,476	$1,392,900	$30,400	$1,136,258	35	24	6
(12) HOU	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(22) LRD	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(05) LBB	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(11) LKF	12	55	5	3	47	$3,888,034	$323,831	$127,860	$220,167	$303,852	12	32	2
(06) ODA	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(01) PAR	33	34	15	14	19	$4,625,571	$401,394	$273,550	$116,664	$385,704	33	23	4
(21) PHR	4	1	1	1	0	991,497	$46,818	$37,796	$0	$37,795	4	1	0
(07) SJT	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(15) SAT	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(10) TYL	6	5	5	4	0	$2,425,634	$168,005	$167,338	$0	$163,505	6	3	0
(09) WAC	8	11	11	10	0	$3,063,000	$306,300	$289,800	$0	$244,358	8	11	0
(03) WFS	21	25	5	5	20	$4,174,114	$417,420	$135,225	$427,451	$367,653	18	17	4
(13) YKM	25	39	19	11	16	$8,103,029	$810,262	$714,084	$160,055	$752,139	24	32	3
Totals	**215**	**338**	**128**	**105**	**160**	**$57,734,258**	**$6,129,791**	**$4,530,072**	**$1,780,647**	**$4,807,805**	**198**	**243**	**27**

Attachment B
FY 2002 Summary of Participation Waived Project Information

District	No. of PWPs	No. of EMPs	EMPs on NBI	EMP(NBI) on School Bus Rt.	EMP(nonNBI) on School Bus Rt.	Total PWP Project Estimates	Total Local Participation Amounts	$ Amt for EMP (NBI)	$ Amt for EMP (nonNBI)	Total $ Amount Waived for PWPs	PWP Projects Let to Contract	EMP Projects Completed	EMP Projects Overdue
(08) ABL	10	14	10	1	0	$2,153,544	$206,442	$236,398	$33,232	$200,190	10	7	0
(04) AMA	3	22	17	15	4	$7,815,081	$781,508	$304,055	$485,000	$780,475	3	10	0
(19) ATL	1	1	0	0	1	$227,215	$22,721	$0	$18,020	$18,020	0	0	0
(14) AUS	22	31	5	1	19	$7,035,845	$703,583	$651,189	$487,709	$701,711	18	15	0
(20) BMT	1	6	0	0	6	$663,243	$66,324	$0	$64,241	$61,734	1	0	0
(23) BWD	14	79	0	0	43	$3,698,600	$322,560	$0	$388,294	$322,560	13	38	0
(17) BRY	15	18	11	12	6	$5,848,217	$451,848	$383,435	$76,886	$398,307	8	14	0
(25) CHS	11	28	3	3	21	$1,391,500	$139,150	$26,600	$122,400	$139,150	10	0	0
(16) CRP	17	8	5	5	3	$4,010,378	$401,039	$505,617	$67,522	$401,039	12	3	0
(18) DAL	17	7	6	5	1	$3,945,054	$394,507	$437,928	$33,000	$360,932	3	0	0
(24) ELP	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(02) FTW	33	33	32	30	3	$11,392,846	$1,139,285	$1,190,700	$71,600	$1,124,135	19	11	4
(12) HOU	2	2	1	1	1	$1,149,500	$114,950	$114,103	$358,000	$114,950	1	1	0
(22) LRD	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(05) LBB	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(11) LKF	6	10	3	1	7	$993,377	$80,165	$41,480	$45,279	$80,165	2	2	0
(06) ODA	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(01) PAR	26	36	15	15	21	$4,795,498	$450,978	$382,913	$88,701	$437,251	12	33	2
(21) PHR	2	1	1	1	0	$530,550	$16,977	$33,000	$0	$16,977	2	1	0
(07) SJT	1	1	1	1	0	$563,850	$56,385	$57,000	$0	$56,385	1	0	0
(15) SAT	4	10	1	1	9	$3,808,741	$380,875	$70,516	$310,400	$356,875	3	0	0
(10) TYL	5	12	12	12	0	$2,677,350	$248,457	$304,702	$0	$248,457	5	11	0
(09) WAC	14	40	26	18	14	$7,422,466	$742,246	$675,250	$124,069	$699,496	12	21	0
(03) WFS	21	30	1	1	29	$3,094,420	$309,442	$54,078	$265,273	$290,548	15	15	1
(13) YKM	14	26	5	4	12	$4,190,446	$419,045	$242,500	$180,553	$382,709	14	16	0
Totals	**239**	**415**	**155**	**127**	**200**	**$77,407,721**	**$7,448,487**	**$5,711,464**	**$3,220,179**	**$7,192,066**	**164**	**197**	**7**

Attachment C
FY 2003 Summary of Participation Waived Project Information

District	No. of PWPs	No. of EMPs	EMPs on NBI	EMP(NBI) on School Bus Rt.	EMP(nonNBI) on School Bus Rt.	Total PWP Project Estimates	Total Local Participation Amounts	$ Amt for EMP (NBI)	$ Amt for EMP (nonNBI)	Total $ Amount Waived for PWPs	PWP Projects Let to Contract	EMP Projects Completed	EMP Projects Overdue
(08) ABL	9	20	2	0	10	$2,066,909	$206,691	$8,200	$282,825	$198,572	9	2	0
(04) AMA	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(19) ATL	3	5	0	0	4	$1,402,078	$140,208	$0	$145,950	$140,208	0	0	0
(14) AUS	3	4	1	1	3	$1,432,029	$143,203	$38,200	$89,800	$106,663	0	0	0
(20) BMT	5	7	3	3	3	$2,444,745	$185,731	$101,042	$122,940	$185,731	1	2	0
(23) BWD	6	47	0	0	41	$1,911,000	$191,100	$0	$192,542	$191,100	6	0	0
(17) BRY	6	8	5	5	3	$1,613,320	$157,775	$125,452	$28,286	$143,770	5	5	0
(25) CHS	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(16) CRP	13	13	2	1	7	$3,234,690	$323,466	$541,550	$526,356	$323,466	4	11	0
(18) DAL	28	11	9	9	2	$7,973,392	$797,339	$584,730	$173,769	$678,965	5	3	0
(24) ELP	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(02) FTW	4	4	4	3	0	$7,776,200	$3,687,673	$981,500	$0	$777,610	1	0	0
(12) HOU	14	7	6	6	1	$6,048,190	$604,819	$967,500	$83,000	$599,079	1	0	0
(22) LRD	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(05) LBB	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(11) LKF	3	13	2	0	7	$863,416	$59,820	$29,660	$31,595	$59,820	0	0	0
(06) ODA	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(01) PAR	20	27	2	2	25	$2,750,436	$275,044	$64,375	$220,124	$275,044	0	27	0
(21) PHR	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(07) SJT	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(15) SAT	2	2	0	0	2	$743,875	$74,388	$0	$95,000	$63,818	0	0	0
(10) TYL	2	3	2	2	1	$623,256	$62,326	$44,500	$18,300	$62,326	0	3	0
(09) WAC	3	12	3	3	8	$1,207,850	$120,785	$61,053	$59,210	$112,785	1	3	0
(03) WFS	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(13) YKM	12	9	2	2	7	$2,710,283	$271,028	$108,500	$268,000	$269,297	5	2	0
Totals	**133**	**192**	**43**	**37**	**124**	**$44,801,669**	**$7,301,396**	**$3,656,262**	**$2,337,697**	**$4,188,254**	**38**	**58**	**0**

Attachment D
FY 2004 Summary of Participation Waived Project Information

District	No. of PWPs	No. of EMPs	EMPs on NBI	EMP(NBI) on School Bus Rt.	EMP (nonNBI) on School Bus Rt.	Total PWP Project Estimates	Total Local Participation Amounts	$ Amt for EMP (NBI)	$ Amt for EMP (nonNBI)	Total $ Amount waived for PWPs	PWP Projects Let to Contract	EMP Projects Completed	EMP Projects Overdue
(08) ABL	1	1	0	0	1	$130,001	$9,115	$0	$10,500	$7,620	1	0	0
(04) AMA	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(19) ATL	3	6	0	0	6	$1,631,084	$141,437	$0	$149,300	$141,437	0	0	0
(14) AUS	4	8	1	1	7	$1,555,486	$155,549	$720,000	$66,293	$155,549	0	0	0
(20) BMT	4	19	1	1	12	$1,351,734	$83,931	$2,300	$133,552	$79,286	2	0	0
(23) BWD	3	15	0	0	13	$572,000	$57,200	$0	$58,154	$57,200	2	0	0
(17) BRY	10	37	9	8	28	$3,315,555	$331,558	$402,307	$49,010	$331,558	0	6	0
(25) CHS	1	1	0	0	1	$171,360	$17,136	$0	$17,410	$17,136	0	0	0
(16) CRP	6	13	1	1	5	$1,787,760	$178,778	$49,462	$130,845	$178,778	0	0	0
(18) DAL	16	6	4	3	2	$6,507,973	$650,798	$705,234	$1,393,600	$646,702	0	0	0
(24) ELP	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(02) FTW	19	21	19	9	2	$7,871,340	$787,134	$819,900	$61,000	$764,562	3	3	0
(12) HOU	11	2	2	2	0	$4,527,215	$452,723	$730,000	$0	$452,723	0	0	0
(22) LRD	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(05) LBB	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(11) LKF	4	5	1	1	4	$1,218,800	$89,230	$23,000	$69,250	$89,230	0	0	0
(06) ODA	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(01) PAR	65	70	12	12	58	$7,787,847	$677,787	$334,217	$447,928	$676,178	0	24	0
(21) PHR	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(07) SJT	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(15) SAT	1	1	0	0	1	$1,224,850	$122,484	$0	$110,500	$110,484	1	0	0
(10) TYL	0	0	0	0	0	$0	$0	$0	$0	$0	0	0	0
(09) WAC	6	6	5	5	1	$3,115,590	$311,559	$222,377	$113,400	$311,559	0	0	0
(03) WFS	13	25	5	5	20	$2,482,012	$248,202	$134,487	$124,299	$248,202	0	5	0
(13) YKM	10	8	7	7	1	$2,750,000	$275,000	$270,000	$78,000	$275,000	0	0	0
Totals	**177**	**244**	**67**	**55**	**162**	**$48,000,607**	**$4,589,621**	**$4,413,284**	**$3,013,041**	**$4,543,204**	**9**	**38**	**0**

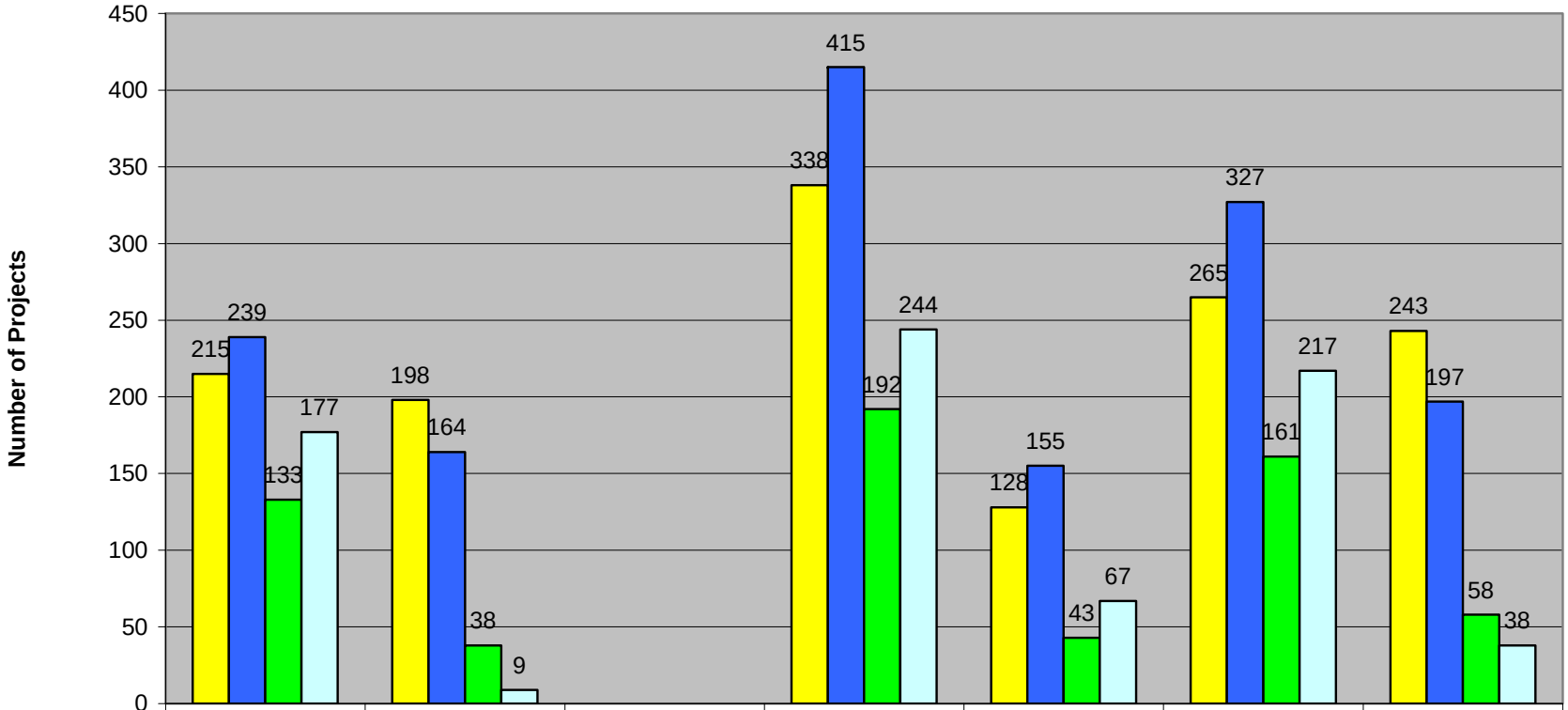
Attachment E
Cumulative Summary of Participation Waived Project Information

(Updated 12/07/03)

	No. of PWPs	No. of EMPs	EMPs on NBI	EMP(NBI) on School Bus Rt.	EMP(nonNBI) on School Bus Rt.	Total PWP Project Estimates	Total Local Participation Amounts	$ Amt for EMP (NBI)	$ Amt for EMP (nonNBI)	Total $ Amount waived for PWPs	PWP Projects Let to Contract	EMP Projects Completed	EMP Projects Overdue
FY2001	215	338	128	105	160	$57,734,258	$6,129,791	$4,530,072	$1,780,647	$4,807,805	198	243	27
FY2002	239	415	155	127	200	$77,407,721	$7,448,487	$5,711,464	$3,220,179	$7,192,066	164	197	7
FY2003	133	192	43	37	124	$44,801,669	$7,301,396	$3,656,262	$2,337,697	$4,188,254	38	58	0
FY2004	177	244	67	55	162	$48,000,607	$4,589,621	$4,413,284	$3,013,041	$4,543,204	9	38	0
TOTAL	**764**	**1,189**	**393**	**324**	**646**	**$227,944,255**	**$25,469,295**	**$18,311,082**	**$10,351,564**	**$20,731,329**	**409**	**536**	**34**

Attachment F

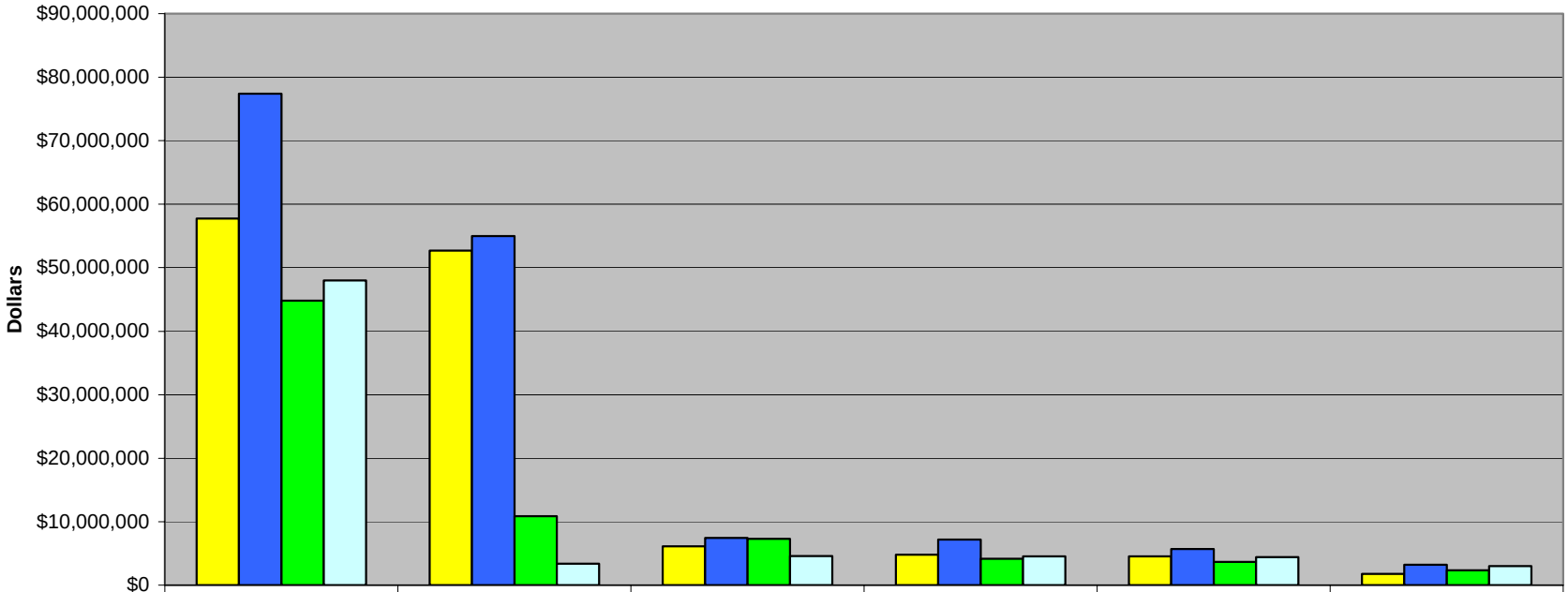
Summary of PWP/EMP Projects



	No. of PWP Agreements Executed in FY	PWPs Let to date for PWPs Executed in FY		No. of EMPs	EMPs on the NBI	EMPs on School Bus Rt.	EMPs Completed to date for PWPs Executed in FY
FY 2001	215	198		338	128	265	243
FY 2002	239	164		415	155	327	197
FY 2003	133	38		192	43	161	58
FY 2004	177	9		244	67	217	38

Attachment G

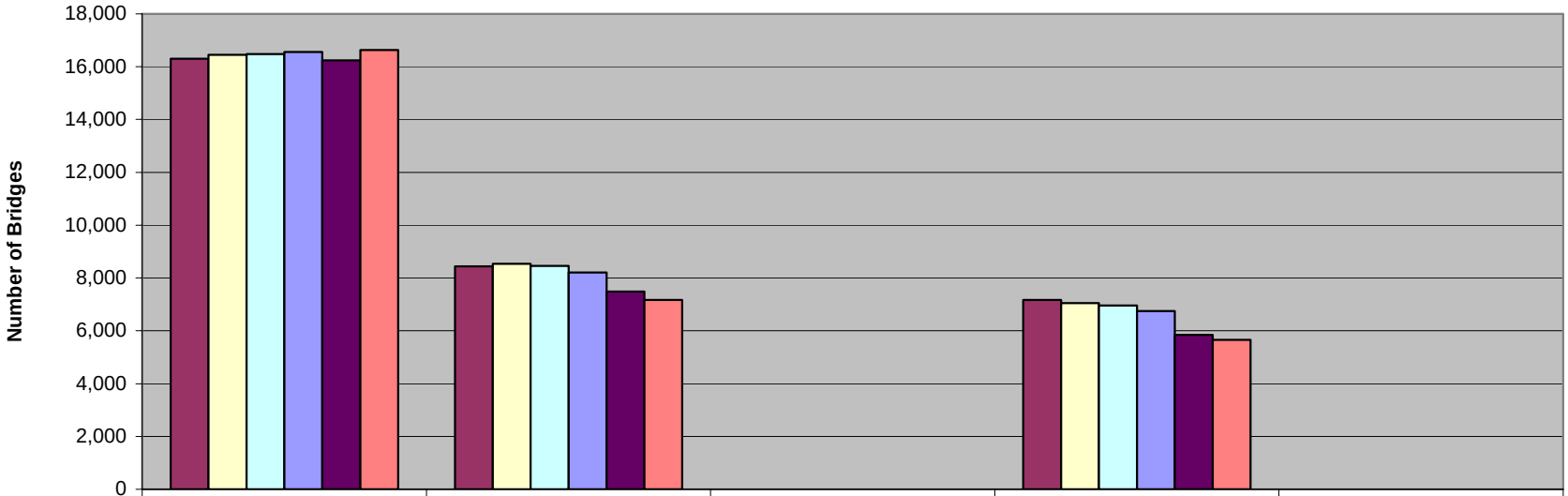
Summary of PWP/EMP $ Amounts



	Total PWP Project Estimates	$ Amt for PWPs Let to date for PWPs Executed in FY	Total Required Local Participation Amounts for PWPs	Total $ Amount Waived for PWPs	$ Amount for EMPs (NBI)	$ Amount for EMPs (nonNBI)
FY 2001	$57,734,258	$52,692,900	$6,129,791	$4,807,805	$4,530,072	$1,780,647
FY 2002	$77,407,721	$54,971,025	$7,448,487	$7,192,066	$5,711,464	$3,220,179
FY 2003	$44,801,669	$10,882,360	$7,301,396	$4,188,254	$3,656,262	$2,337,697
FY 2004	$48,000,607	$3,406,825	$4,589,621	$4,543,204	$4,413,284	$3,013,041

Attachment H

Off-System Bridge Inventory FY1999-FY2004
(based on Sept. Pocket Facts)



	Total Off-System Bridges	Deficient/Obsolete Bridges Including Substandard for Load Only	% Deficient/Obsolete Including Substandard for Load Only	Deficient/Obsolete by FHWA Criteria Only	% Deficient/Obsolete by FHWA Criteria Only
FY 1999	16,300	8,440	51.8%	7,170	44.0%
FY 2000	16,448	8,538	51.9%	7,046	42.8%
FY 2001	16,476	8,461	51.4%	6,957	42.2%
FY 2002	16,560	8,205	49.6%	6,748	40.8%
FY 2003	16,242	7,489	46.1%	5,847	36.0%
FY 2004	16,633	7,167	43.1%	5,659	34.0%

Appendix B – Texas Counties and TxDOT Districts

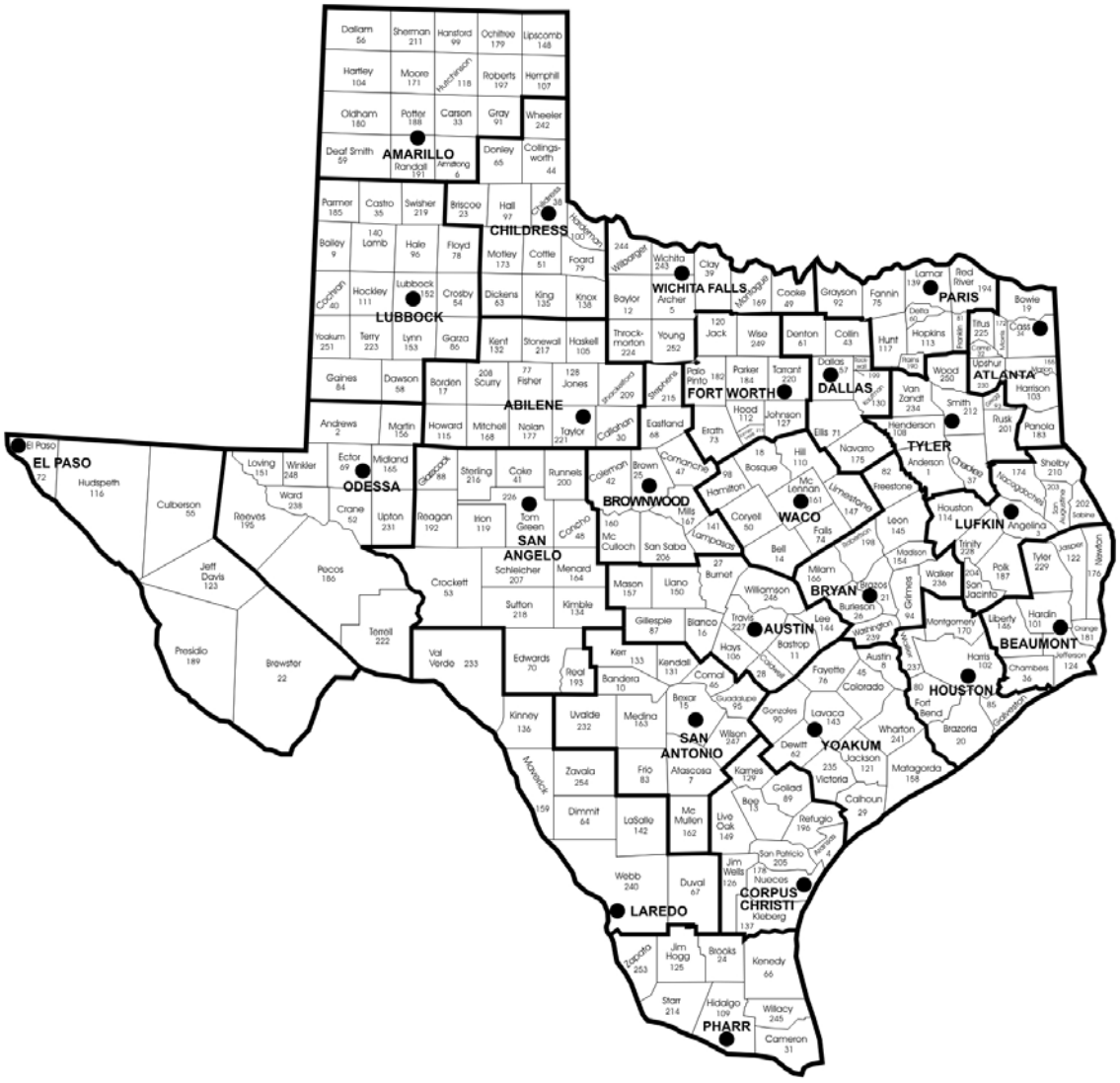


Figure B-1. Texas Counties and TxDOT Districts

Table B-1. Texas Counties, County Numbers, and TxDOT District

County	County Number	TxDOT District	County	County Number	TxDOT District	County	County Number	TxDOT District
Anderson	1	Tyler	Coryell	50	Waco	Hardeman	100	Childress
Andrews	2	Odessa	Cottle	51	Childress	Hardin	101	Beaumont
Angelina	3	Lufkin	Crane	52	Odessa	Harris	102	Houston
Aransas	4	Corpus Christi	Crockett	53	San Angelo	Harrison	103	Atlanta
Archer	5	Wichita Falls	Crosby	54	Lubbock	Hartley	104	Amarillo
Armstrong	6	Amarillo	Culberson	55	El Paso	Haskell	105	Abilene
Atascosa	7	San Antonio	Dallam	56	Amarillo	Hays	106	Austin
Austin	8	Yoakum	Dallas	57	Dallas	Hemphill	107	Amarillo
Bailey	9	Lubbock	Dawson	58	Lubbock	Henderson	108	Tyler
Bandera	10	San Antonio	Deaf Smith	59	Amarillo	Hidalgo	109	Pharr
Bastrop	11	Austin	Delta	60	Paris	Hill	110	Waco
Baylor	12	Wichita Falls	Denton	61	Dallas	Hockley	111	Lubbock
Bee	13	Corpus Christi	Dewitt	62	Yoakum	Hood	112	Fort Worth
Bell	14	Waco	Dickens	63	Childress	Hopkins	113	Paris
Bexar	15	San Antonio	Dimmit	64	Laredo	Houston	114	Lufkin
Blanco	16	Austin	Donley	65	Childress	Howard	115	Abilene
Borden	17	Abilene	Duval	67	Laredo	Hudspeth	116	El Paso
Bosque	18	Waco	Eastland	68	Brownwood	Hunt	117	Paris
Bowie	19	Atlanta	Ector	69	Odessa	Hutchinson	118	Amarillo
Brazoria	20	Houston	Edwards	70	San Angelo	Irion	119	San Angelo
Brazos	21	Bryan	Ellis	71	Dallas	Jack	120	Fort Worth
Brewster	22	El Paso	El Paso	72	El Paso	Jackson	121	Yoakum
Briscoe	23	Childress	Erath	73	Fort Worth	Jasper	122	Beaumont
Brooks	24	Pharr	Falls	74	Waco	Jeff Davis	123	El Paso
Brown	25	Brownwood	Fannin	75	Paris	Jefferson	124	Beaumont
Burleson	26	Bryan	Fayette	76	Yoakum	Jim Hogg	125	Pharr
Burnet	27	Austin	Fisher	77	Abilene	Jim Wells	126	Corpus Christi
Caldwell	28	Austin	Floyd	78	Lubbock	Johnson	127	Fort Worth
Calhoun	29	Yoakum	Foard	79	Childress	Jones	128	Abilene
Callahan	30	Abilene	Fort Bend	80	Houston	Karnes	129	Corpus Christi
Cameron	31	Pharr	Franklin	81	Paris	Kaufman	130	Dallas
Camp	32	Atlanta	Freestone	82	Bryan	Kendall	131	San Antonio
Carson	33	Amarillo	Frio	83	San Antonio	Kenedy	66	Pharr
Cass	34	Atlanta	Gaines	84	Lubbock	Kent	132	Abilene
Castro	35	Lubbock	Galveston	85	Houston	Kerr	133	San Antonio
Chambers	36	Beaumont	Garza	86	Lubbock	Kimble	134	San Angelo
Cherokee	37	Tyler	Gillespie	87	Austin	King	135	Childress
Childress	38	Childress	Glasscock	88	San Angelo	Kinney	136	Laredo
Clay	39	Wichita Falls	Goliad	89	Corpus Christi	Kleberg	137	Corpus Christi
Cochran	40	Lubbock	Gonzales	90	Yoakum	Knox	138	Childress
Coke	41	San Angelo	Gray	91	Amarillo	Lamar	139	Paris
Coleman	42	Brownwood	Grayson	92	Paris	Lamb	140	Lubbock
Collin	43	Dallas	Gregg	93	Tyler	Lampasas	141	Brownwood
Collings-worth	44	Childress	Grimes	94	Bryan	LaSalle	142	Laredo
Colorado	45	Yoakum	Guadalupe	95	San Antonio	Lavaca	143	Yoakum
Comal	46	San Antonio	Hale	96	Lubbock	Lee	144	Austin
Comanche	47	Brownwood	Hall	97	Childress	Leon	145	Bryan
Concho	48	San Angelo	Hamilton	98	Waco	Liberty	146	Beaumont
Cooke	49	Wichita Falls	Hansford	99	Amarillo	Limestone	147	Waco

Table B-1 (Continued). Texas Counties, County Numbers, and TxDOT District

County	County Number	TxDOT District	County	County Number	TxDOT District	County	County Number	TxDOT District
Lipscomb	148	Amarillo	Parker	184	Fort Worth	Tarrant	220	Fort Worth
Live Oak	149	Corpus Christi	Parmer	185	Lubbock	Taylor	221	Abilene
Llano	150	Austin	Pecos	186	Odessa	Terrell	222	Odessa
Loving	151	Odessa	Polk	187	Lufkin	Terry	223	Lubbock
Lubbock	152	Lubbock	Potter	188	Amarillo	Throckmor-ton	224	Wichita Falls
Lynn	153	Lubbock	Presidio	189	El Paso	Titus	225	Atlanta
Madison	154	Bryan	Rains	190	Paris	Tom Green	226	San Angelo
Marion	155	Atlanta	Randall	191	Amarillo	Travis	227	Austin
Martin	156	Odessa	Reagan	192	San Angelo	Trinity	228	Lufkin
Mason	157	Austin	Real	193	San Angelo	Tyler	229	Beaumont
Matagorda	158	Yoakum	Red River	194	Paris	Upshur	230	Atlanta
Maverick	159	Laredo	Reeves	195	Odessa	Upton	231	Odessa
McCulloch	160	Brownwood	Refugio	196	Corpus Christi	Uvalde	232	San Antonio
McLennan	161	Waco	Roberts	197	Amarillo	Val Verde	233	Laredo
McMullen	162	San Antonio	Robertson	198	Bryan	Van Zandt	234	Tyler
Medina	163	San Antonio	Rockwall	199	Dallas	Victoria	235	Yoakum
Menard	164	San Angelo	Runnels	200	San Angelo	Walker	236	Bryan
Midland	165	Odessa	Rusk	201	Tyler	Waller	237	Houston
Milam	166	Bryan	Sabine	202	Lufkin	Ward	238	Odessa
Mills	167	Brownwood	San Augustine	203	Lufkin	Washing-ton	239	Bryan
Mitchell	168	Abilene	San Jacinto	204	Lufkin	Webb	240	Laredo
Montague	169	Wichita Falls	San Patricio	205	Corpus Christi	Wharton	241	Yoakum
Montgom-ery	170	Houston	San Saba	206	Brownwood	Wheeler	242	Childress
Moore	171	Amarillo	Schleicher	207	San Angelo	Wichita	243	Wichita Falls
Morris	172	Atlanta	Scurry	208	Abilene	Wilbarger	244	Wichita Falls
Motley	173	Childress	Shackel-ford	209	Abilene	Willacy	245	Pharr
Nacog-doches	174	Lufkin	Shelby	210	Lufkin	Williamson	246	Austin
Navarro	175	Dallas	Sherman	211	Amarillo	Wilson	247	San Antonio
Newton	176	Beaumont	Smith	212	Tyler	Winkler	248	Odessa
Nolan	177	Abilene	Somervell	213	Fort Worth	Wise	249	Fort Worth
Nueces	178	Corpus Christi	Starr	214	Pharr	Wood	250	Tyler
Ochiltree	179	Amarillo	Stephens	215	Brownwood	Yoakum	251	Lubbock
Oldham	180	Amarillo	Sterling	216	San Angelo	Young	252	Wichita Falls
Orange	181	Beaumont	Stonewall	217	Abilene	Zapata	253	Pharr
Palo Pinto	182	Fort Worth	Sutton	218	San Angelo	Zavala	254	Laredo
Panola	183	Atlanta	Swisher	219	Lubbock			